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# TEXAS AGRICULTURAL EXPERIMENT STATION

A. B. CONNER, DIRECTOR  
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DIVISION OF APICULTURE

## VALUABLE PLANTS NATIVE TO TEXAS



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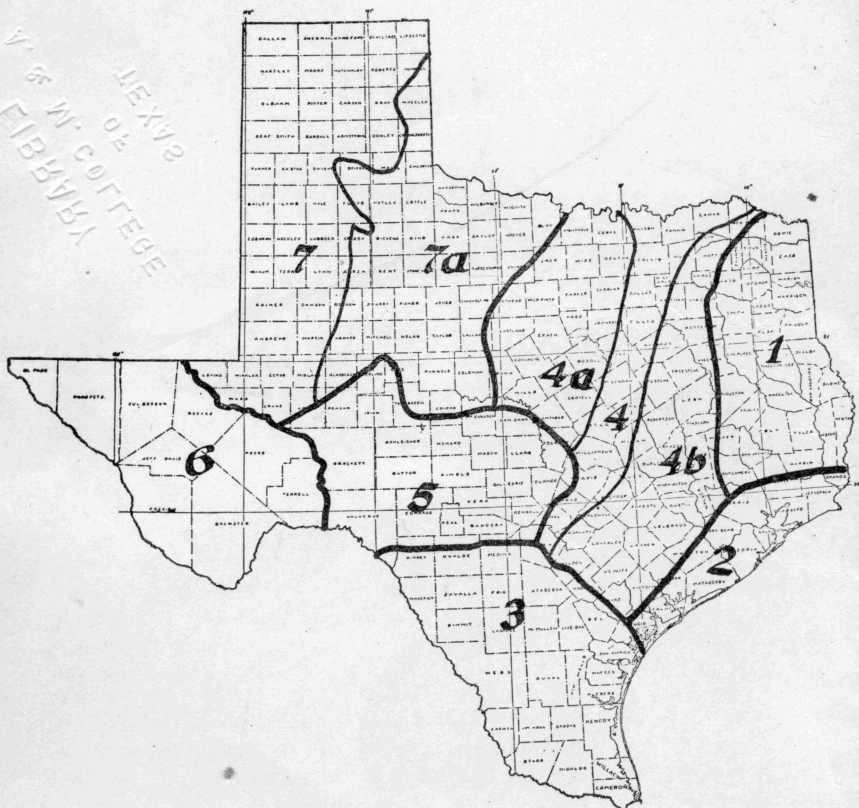


FIGURE 1: FLORAL AREAS OF TEXAS

- |                       |                             |
|-----------------------|-----------------------------|
| 1. Pine Forest Region | 4. Blackland Prairie        |
| 2. Gulf Coast Prairie | 4a. Western Hardwood Forest |
| 3. Brush Country      | 4b. Eastern Hardwood Forest |
| 5. Edwards Plateau    |                             |
| 6. Trans-Pecos Region |                             |
| 7. High Plains        |                             |
| 7a. Low Plains        |                             |

**VALUABLE PLANTS NATIVE TO TEXAS**

by

H. B. Parks, Chief, Division of Apiculture\*

This Bulletin has been prepared from records made by the writer during the past fourteen years at the Apicultural Research Laboratory near San Antonio together with those made from December 1917 to July 1922 at various points in Texas.

The total number of plants on which records have been taken is more than three thousand. Included in this list are those plants which apparently have abundant possibilities for service in the various projects which are now being carried on for the use of native plants as ornamentals, as a means of erosion control, and for the various other services to which plants may be utilized. A large number of plants native to Texas are not found in this list due to the fact that the value of some of them is well known, others are available at nurseries, or the seed can be had from merchants. To include all those that have possibilities would be to describe the majority of more than five thousand species that occur in Texas. But the scope of this paper has been narrower; only those plants that have been actually observed or studied experimentally are included.

This intensive study has been carried on in connection with the work of this Laboratory as the rapid increase of agriculture has destroyed the native bee pasturage to an alarming extent, to show that if the bee industry in the State of Texas is to continue profitable the pasturage which has now been destroyed must be replaced. To make popular the growing of honey plants by man offered the quickest and best solution to this problem; therefore much work has been done in hunting out and testing those plants thought to be valuable to man in any way and at the same time supplying food to the bees. Some of the findings of this Laboratory have been made public from time to time through the local press and bee-keeping journals, and as a result an ever-growing number of requests for such information comes to this office. Because the Federal agencies have been working to preserve and increase the natural assets of farms, there has come a flood of requests for information as to what plants are valuable to aid in the natural increase of farm value.

The technical names of plants used in this Bulletin are identical with those used in Bulletin 550, Catalogue of the Flora of Texas. The common names so far as possible are the same as those used in Standardized Plant Names. The Arabic numbers refer to the geographical divisions of the state in the map which is the frontispiece to this study.

Distribution locations given, such as "south of San Antonio," or "south and east of Austin," are intended to show that the plant is found in

\*In charge of Apicultural Research Laboratory, located near San Antonio.

that section of Texas lying south of a line crossing the state from east to west through the city of San Antonio, or occurs in that part of the state which lies south of a line passing east and west and east of a line passing north and south through the city of Austin. Such expression as "the Gulf Coast" or "high plains" refer to the names given to the plant areas on the map. The word "commercial" indicates that the living plant or its seed may be procured through commercial agencies. The expression "in the full sun" indicates that the plant needs no shade whatever. The expression "in the wild" indicates that the plant may be found growing as a native and should be procured from such a location.

Whenever possible plants should be secured from floriculturists and nurserymen. In Texas there is a large number of small nurseries which can supply the local plants from the section where they are located. There is also a number of nurserymen who make a specialty of growing native species and who are sufficiently well informed that if a certain plant native to their sections is needed they will be able to supply the plant in good condition. In the United States and in Europe are many firms who grow and have on hand for sale the seed of a large number of the rare plants, and it is much easier to obtain some of the more beautiful and rare specimens from such companies than by attempting to obtain them from their natural habitat. The Division of Apiculture has neither plants nor seed for distribution. If information is needed as to where native plants can be secured, however, this information will be supplied whenever it is at hand.

### POLYPODIACEAE

*Adiantum Capillus-veneris* L. Venus Hair Fern. A delicate fern with shiny black stems, light green leaflets; native to sections 7A, 4A, 4, 4B, 1, 2, 5, and will grow in the remainder of the floral areas of Texas wherever water is plentiful. Evergreen and will endure low temperatures. Commercial.

*Asplenium* Resurrection Fern. There are three species of these ferns which occur in the state. They are known by the dark colored stems and light green leaflets. These ferns have the property of being able to resist drought for long periods of time and then take advantage of light rainfall for their growth. All species of native ferns should be used in landscape work. Many of the ferns, though small and not inviting when found, are very beautiful if given shade and water, and will outlive cultivated varieties.

*Polypodium virginianum* L. The Licorice Fern of southeastern United States. This peculiar fern which grows commonly on the bark of leaning trees is found in sections 4A, 4, 4B, 1 and to some extent in 3. The ferns are generally found on post oak trees. During dry periods they appear as shriveled brown leaves. Twenty minutes of rainfall transforms these into beautiful ferns with attractive green leaves. The roots of the ferns live on the decaying bark of the trees. This fern can be trans-

planted easily by taking a piece of the bark containing the living plants and placing it on another tree. It is not only a curiosity but a thing of beauty. For demonstrating the recovery power of desert plants this is one of the best organisms.

### OSMUNDACEAE

*Osmunda cinnamomea* L. Cinnamon Fern. Too well known to need description; native to the eastern part of Texas. Will grow anywhere in the state to a height of from four to five feet when water is furnished. Can be purchased from any dealer.

*Osmunda regalis* L. var. *spectabilis* (Willd.) A. Gray. Regal Fern. This peculiar fern, which more nearly represents the ferns of the Coal Period than any other of those native to Texas, is found in isolated bogs and swamps in sections 4A, 4, 4B, 1, 2, and 5. It is easily transplanted and will grow wherever shade and water are furnished. Commercial.

### OPHIOGLOSSACEAE

*Ophioglossum Engelmannii* Prantl. Adder's Tongue Fern. This peculiar little fern is a great addition to any fernery or rock garden. It must have shade, moisture, and deep leaf mold. When transplanted it will maintain itself for years and multiply. Found in woodlands in sections 4A, 4, 4B, 1, 2, 3, and 5 and can be raised with care in any portion of the state where the proper surroundings are provided.

### MARSILEACEAE

*Marsilea uncinata* A. Br. The Four-Leafed Clover Fern. Common plant throughout Texas. Though there are four species which are confused in the popular mind, the plant is well known. It grows in any moist location and is very persistent. Representatives of the genus have been collected in all sections of the state; however, it is more common in sandy soils where there is a limited amount of shade. It can be transplanted with great success and makes a wonderful addition to any garden. It should be located near a hydrant or other constant source of water.

### EQUISETACEAE

*Equisetum hyemale* L. The Scouring Rush. Native of much of Texas. Little known as it is restricted to shady, damp locations. Because of its peculiar manner of growth and its persistency of life, it makes a handsome addition to the rock or water garden. It should be used in park and roadside plantings where water-fronts are available. It makes a good plant to aid in the preservation of water-soaked banks.

**SELAGINELLACEAE**

*Selaginella lepidophylla* (Hook. & Grev.) Spreng. Resurrection Plant. This is the best known member of this group. Its properties of being able to remain in a desiccated form for many months makes it possible for this plant to exist in the most arid regions of Texas. The fact that with the application of moisture the plant will return to its normal fern-like condition makes it an interesting curiosity to everyone who loves plants. One of the best uses to which it can be placed is to cover unsightly foundations to buildings. It will attach itself to the mortar between the rock and will remain as a gray-green cover throughout the dry weather. In damp weather the entire wall will be covered with beautiful green leaves. Can be purchased from any curio store or procured in many places in Trans-Pecos Texas.

*Selaginella Riddellii* Van Eseltine. Ground Pine. This peculiar kin of the ferns is found in every section of the state. It is commonly classed by gardeners as a moss. It is a perennial, moss-like plant with numerous evergreen branches ranging from two to three inches in height. It can be found in almost any sandy location but is native to all parts of the state. It is green during damp periods of the year especially in mid-winter. It makes an excellent plant for a rock garden or to cover the rough rock foundations of buildings.

**PINACEAE**

*Cupressus arizonica* Greene var. *bonita* Lemmon. Arizona Cypress. This well-known evergreen is a native of the mountains of the south Trans-Pecos area. It and its various varieties have long been in cultivation. It will thrive in any portion of the state with the exception of the Rio Grande Plains. It can be purchased from any dealer.

*Juniperus lucayana* Britt. Gulf Coast Cedar. The native Juniper of the Gulf Coast and central Texas. It is grown extensively and is recommended for sections 4A, 4, 4B, 1, and 2. Commercial.

*Juniperus Pinchoti* Sudw. Mountain Cedar. The small mountain cedar of the Edwards Plateau is a very satisfactory evergreen for specimen plants, backgrounds, and hedges. This species is recommended for 7, 7A, 4A, and 5. Commercial.

*Juniperus virginiana* L. Virginia Red Cedar. This species of cedar has long been a favorite with nurserymen. It will thrive in all of Texas with the exception of the Rio Grande Plains, the Gulf Coast, and Trans-Pecos. Commercial.

*Juniperus pachyphloea* Torr. Rough barked or Alligator Juniper. Native to Trans-Pecos Texas. While this Juniper has not been widely cultivated, there is no doubt that it will prove very satisfactory in sections 7, 7A, 4A, and 5. Commercial.



*Pinus cembroides* Zucc. var. *edulis* (Engelm.) Vos. Pinyon Pine. Native of Trans-Pecos Texas and the Edwards Plateau area. Will give good service also in 7, 7A, 4A, 4, and the parts of 3 near the southern border of 5. Commercial.

*Pinus echinata* Mill. Short-Leafed Pine. This well known tree is native to parts of 1 and 4B and will thrive anywhere it is planted. Recommended for sandy lands in 4A, 4, and 4B.

*Taxodium distichum* (L.) L. C. Rich. Southern Cypress. A native through sections 1 and 2, parts of 4, 4B, 3, and 5. The tree is an ever-green which drops its leaves. While it is generally found growing in water, it will do equally well on upland in the eastern part of the state. It will grow from seed or can be purchased from dealers.

### EPHEDRACEAE

*Ephedra antispyhilitica* Berl ex. C. A. Meyer. Joint Fir. This peculiar shrub is little known but makes a very interesting hedge or specimen plant. Its long reed-like green branches and clusters of yellow stamens and red berries in early spring make the plant worthy of cultivation. It is a native of sections 4, 3, 5, 6, and 7.

*Ephedra pedunculata* Engelm. Vine Ephedra. This is the most peculiar vine shrub in the state of Texas. It is a native of the Edwards Plateau and adjacent parts of the Rio Grande Plains. It grows as a vine to a height of from ten to twenty feet, at which point it produces a dense cluster of long green branches which hang downward giving a very odd appearance to the plant. It blooms in mid-summer and ripens its red fruits from September to November. Several other species of Ephedra are native to sections 7, 7A, 4A, 4, 3, 5, and 6. All are worthy of cultivation.

### TYPHACEAE

*Typha angustifolia* L. The common narrow-leafed cat-tail of the eastern section of the state. This is a moisture-loving plant that needs to be grown more extensively. It will thrive throughout the state but should be planted in moist places such as near springs, along water courses, or where water stands throughout the year. Can be used effectively in ornamental work around lakes.

*Typha latifolia* L. The Wide-leafed Cat-tail. This is a magnificent plant that should be used wherever running or standing water is available or along roadsides where beautification work is being done. Under optimum conditions the plant will grow to a height of twelve feet. It is hardy and needs little care. Native to all of Texas.

### ALISMACEAE

*Sagittaria falcata* Pursh. Arrow Leaf. This and a number of other species of the genus are native to much of Texas. They are water plants and are well known by their large arrow-shaped leaves and spikes of



white flowers. They are easily grown wherever water is available and should be largely planted around artificial lakes and water courses. They are persistent and will give long service. Commercial.

### GRAMINEAE

*Andropogon provincialis* Lam. Big Blue Stem. This well-known grass is native to all portions of the state with the exception of the Rio Grande Plain. It is easily transplanted, does not spread rapidly, is more easily handled, and makes a far more lasting ornamental than the cultivated Pampas Grasses. A single clump of this grass will be ornamental throughout the year. A hedge made from it is not only a curiosity but will attract a great deal of attention by the constantly changing appearance of the growing plant.

*Andropogon scoparius* Michx. Little Blue Stem. This well-known sedge grass makes a fine ornamental especially as a background to hide fences or the foundations of buildings. It appears as a green tufted grass until July when it starts to put up its seeding stalks, which when full grown assume a red color that persists through the winter. It is recommended for trial all over Texas.

*Andropogon virginicus* L. This tall-growing broom sedge with its enlarged seed clusters makes a beautiful ornamental but will grow only where moist or wet soil exists. It should be used as a background around artificial lakes and where landscaping is carried out along water courses.

*Andropogon glomeratus* (Walt.) B.S.P. This bunch grass also requires moist or wet land to produce a presentable appearance. In favorable localities it grows to a height of from four to five feet producing a wealth of feathery plumes which persist through the winter. It is worthy of a trial in soft soils where moisture is available.

*Arundinaria gigantea* (Walt.) Chapm. Reed Grass. This extremely large grass is native to the water courses and swamps of southeast Texas but is found growing in sections 4A, 4, 3, and 5, probably brought there by man. It reaches a height of seven to ten feet and makes a splendid plant for cover along mud flats where the seasonal change of water would leave bare places. Commercial.

*Arundo Donax* L. This is the reed grass of southern Texas. It has been used for many years to aid in erosion control and especially to protect earthen dams from the wash of the waves. It can be grown as a specimen plant, as a hedge for the protection of soils, or as a wind-break. Commercial.

*Phragmites communis* Trin. var. *Berlandieri* (Fourn.) Fernald. Reed Grass. This is the other large reed-like grass which is native to sections 4B, 1, and 2 and will grow anywhere that a plentiful supply of water is available. Commercial.

*Spartina pectinata* Link. A coarse bunch grass which will persist and thrive on almost any soil in sections 4, 4B, 2, and 3. This plant makes a good addition to any collection of hardy ornamentals. It can be used to cover almost any kind of unsightly places.

### CYPERACEAE

*Dichromena colorata* (L.) A. S. Hitchc. White-topped Umbrella Grass. This very grass-like plant is found in sections 4B, 1, and 2 and can be grown in 4A, 4, and parts of 3 and 5. This sedge requires moisture but not shade. The peculiar dark green color with the white in the center of the blade clusters makes it very attractive. There are several cultivated varieties. Any of the members of this family are commonly called Carex or Umbrella Grass. They are very showy and will grow well as specimen plants in cultivation. Many of them have beautiful seed clusters. They are easily transplanted and will grow with the least amount of attention. The large species should be used in roadside plantings.

*Scirpus californicus* (C. A. Meyer) Britton. Giant Bulrush. Exceedingly attractive plant where water is available in quantity. An evergreen, it will grow from six to twelve feet high, and is a very attractive member of a water garden where cat-tails and other tall-growing plants form screens to hide unsightly backgrounds. Numerous other species are found in every portion of the state and will grow wherever water or damp locations are found.

### PALMACEAE

*Sabal minor* (Jacq.) Pers. (*S. glabra* Sarg.) This is the Palmetto of Texas. Native to sections 1, 2, and 4B, but will grow with care in 4, 5, and 3. It requires soft rich soils and abundance of moisture. Under cultivation it has a tendency to grow tall and more slender than in its native habitat. This plant is quite hardy and will survive far north of the limits of other palms. In north central Texas this species should be planted. Commercial.

*Sabal texana* Becc. (S. Palmetto R. & S.) Texas Palm. Native only to one place in Cameron County; however, because it is well known, it has been widely cultivated and is found not only throughout the Gulf Coast region of Texas but on the Gulf Coast regions of neighboring states, in Florida, and in California. It grows readily from seed but as it can be procured from any nurseryman one is advised to buy this plant. This palm is hardy as far north as San Antonio.

### ARACEAE

*Arisaema Dracontium* (L.) Schott. Dragon Head. This plant, which bears one leaf and a green flower, somewhat resembles a calla lily, and is found in sections 4, 4B, 1, 2, and to some extent in 3 and 5. It is one of the Indian Turnips of the schoolboy. It is hardy in the districts

named but requires shade, soft soils, and moisture. It blooms in early spring and the flowers are followed by a cluster of bright red berry-like fruits which make it a very attractive plant. These red fruits persist through the winter. Commercial.

*Arisaema triphyllum* (L.) Schott. This is the Jack-in-the-pulpit of literature. Native to sections 4, 4B, and occurs sparsely in 1, 2, 3, and 5. It can be grown to advantage in any shady, damp location and does well on the north side of the house where it is hard to find some attractive plant which will thrive in the dense shade. Its calla-lily-like flowers which persist for some time are followed by a cluster of red fruits. Commercial.

*Peltandra virginica* (L.) Kunth. A bog plant with arrow-shaped leaves common to the bogs of East Texas. It is a welcome addition to any garden or planting where shade and considerable moisture are available. It will also grow in standing water. The beautiful dark green arrow-shaped leaves and peculiar green calla-lily-like flower make it an attractive addition to any collection of water-loving plants. This species should be grown wherever a lily pool is maintained. Commercial.

#### XYRIDACEAE

*Xyris fimbriata* Ell. Fringed Yellow-eyed Grass. This most beautiful grass-like plant should be grown wherever a water plant is needed. The blades grow from four to six feet high and bear in mid-summer many fruiting stalks. These are tall and enlarged towards the heads, which consist of cone-like clusters of bracts. When in bloom a bright yellow petal-like fringe is displayed between the bracts, making this grass very ornamental. The plant is native to 4B, 1, and 2 and will give good service as an ornamental in any part of Texas where a water garden can be maintained.

#### COMMELINACEAE

*Commelina*. This genus has at least four species which are very common to all of Texas east of San Antonio. They are commonly spoken of as Day Flowers owing to the fact that the large bright blue petals exist only for a part of a day. The plant very much resembles the Wandering Jew of horticulture in its manner of growth, and as the genus is native it will give better service than the introduced plants.

*C. angustifolia*, Michx., *C. crispa*, *C. longicaulis*, and *C. virginica* L. are recommended. They can be procured from the wild in the sections of the state mentioned. The members of this genus adapt themselves to window-boxes and if cared for will persist through the winter.

*Commelinantia anomala* (Torr.) Tharp. Widow's Tears. This beautiful member of this family grows tall, produces quite large flowers, and makes a very attractive addition to any rock garden and especially to the flower bed where there is heavy shade. The plant is native to sections 4A, 4, 4B,

and 5, and will probably give satisfaction in 7A, 1, 2, and parts of 3. Its requirements are some shade, rich loose soil, and a fair amount of moisture. It is quite adaptable as it has been collected from the top of the Edwards Escarpment to the swamps of Eastern Gonzales county.

*Tradescantia*. Spiderwort. The members of this genus are commonly known in Texas as Spider Lilies. The flowers are white, through blue to pink. They are all perennials, quite hardy, and attractive. Their leaves are long and grass-like. Where they have stems these are succulent.

*Tradescantia gigantea* Rose; *T. canaliculata* Raf.; *T. humilis* Rose; and *T. hirsutiflora* Bush are the species which adapt themselves to cultivation. These plants will grow anywhere in the state where shade, rich soil, and moisture are available. They will well repay anyone who will transplant them from the wild or procure them from dealers.

### BROMELIACEAE

*Hechtia texensis* S. Wats. False Agave. This is one of the most peculiar plants native to Texas. It is found in quantity along the Rio Grande Valley from Hidalgo County north to the west corner of Jeff Davis County. Under cultivation it probably will survive anywhere south of San Antonio. The plant itself very much resembles aloe or agave. Like the agaves it requires several years to produce a bloom stalk. The plants resemble lechuguilla; however, they bear only a few thorns and the plant is beautifully colored. At the age of six or seven years the agave-like cluster of leaves sends up a flower stalk from four to five feet in height and produces numerous peculiarly shaped flowers which consist mostly of stamens. The plant belongs to the pineapple family. It is an attractive addition to any collection of plants where the oddities of the arid Southwest are grown.

*Tillandsia Baileyi* Rose. Bailey's Ball Moss. A very interesting plant which will maintain itself along the Gulf Coast and in locations where moisture and warmth are available, it is not a parasite but grows attached to the limbs of bushes and trees through the tropical zone of the Gulf Coast. The individual plants resemble the individuals of the ordinary ball moss so common throughout most of East Texas. The leaves are from six to eight inches long. Through the early summer the plants bear fruiting spikes which are red and produce blue iris-like flowers. Along the Gulf Coast the plant can be taken from its place in the wild and located almost anywhere desired. It makes a very attractive hanging basket as it needs no attention save a sufficient amount of water to wash the dust from the plant. In green houses or dwelling houses where moisture conditions are maintained, this plant will grow and thrive.

*Tillandsia recurvata* L. Small Ball Moss. This odd plant is common to sections 4A, 4, 4B and parts of 3 and 5, where in some places it grows in such quantities as to be unsightly. Outside of its habitat it is an attractive curiosity. The clusters of small plants will live for months without any attention whatever. In the spring when moist conditions occur they will give rise to numerous small purple flowers which are quite attractive. This plant has been shipped all over the United States and has bloomed in far-away locations under the influence of moisture.



*Tillandsia usneoides* L. Spanish Moss. This grows abundantly in 4, 4B, 1 and 2 and will grow elsewhere if introduced. In some parts of these sections it grows so abundantly as to be used as cow feed and sold on the market. The plant makes a beautiful ornament as it furnishes gray-green draping which will last for a long time. All that is needed to transplant the moss is to sever the plants from the tree and place them where wanted.

### PONTEDERACEAE

*Eichornia (Piaropus) crassipes* (Mart.) Solms. Water Hyacinth. This most beautiful plant is a pest over much of the Gulf Coast in Florida and East Texas. As an ornamental for a small water garden it recommends itself as it will grow easily and produce showy lilac-colored flowers. Under cultivation it will grow anywhere in Texas. All it needs is fresh water. It is attractive as an aquarium plant as it floats by the bulbs which are located on the large stalks; however, a constant supply of fresh water must be supplied to the aquarium. Commercial.

*Pontederia cordata* L. Pickerel Weed. This plant is somewhat like canna, except that it produces throughout the summer spikes of purple flowers. It is native to sections 4, 4B, 1, and 2 but will thrive wherever water and shade are available. Its favorite place to grow is in the edge of a running stream. The plant should be largely used in water gardens and where stream banks are to be beautified. Commercial.

### LILIACEAE

*Allium Coryi* M. E. Jones. Yellow-flowered Onion. This onion which produces a large umbel of bright yellow flowers is a native to the mountains of Trans-Pecos Texas. Like all bulb plants it is probable that it will grow anywhere. It will give an additional color to any bulb garden. In its habitat it forms large beds which, when in bloom, add spots of gold to the green hillsides. It blooms through a period of about three weeks in early spring. The plant is little known but should become a favorite with growers of bulb plants.

*Allium Nuttallii* S. Wats. The White-flowered Onion. This is the common small onion which produces large umbels of white flowers early in the spring. It is native to all of Texas with the exception of the Gulf Coast and the pine sections. As a hardy bulb plant which will maintain itself and will not spread beyond bounds, this little native onion is of great value in permanent plantings for roadsides, park sites, and cemeteries.

*Asparagus officinalis* L. Asparagus. This peculiar liliaceous plant, which is more often spoken of as a fern, thrives throughout Texas. In many sections it has gone wild. Because of its fern-like foliage and large size, it is popular as a source of green for cut-flower bouquets. It makes an excellent background or beautiful specimen plant. It is a garden vegetable.

*Dasyilirion texanum* Scheele. This is the Sotol of sections 4A, 5, and 6. It will grow and give satisfaction in all of Texas west of Austin and in some places in northeast Texas. It is a long time annual, requiring some ten to fifteen years from seed to flower and, as a rule, dying as soon as the seed has been matured. It bears a large rosette of narrow blades from two to four feet in length, the edges of which are bordered by teeth. At flowering time it sends up a strong shoot which may grow up to twenty feet, depending upon the soil in which the plant grows. The stalk bears numerous small leaf blades and is covered in the upper third by large numbers of small lily flowers which are followed by small black fruits. This plant fits into any flower arrangement. It is of great value in floral structure where the foundations of large buildings are to be given a floral cover. It is a plant that should be utilized to a greater extent than at present. Commercial.

*Erythronium albidum* Nutt. Dog-toothed Violet. This is a small but typical lily. It is found native in Texas in sections 4A, 4, 4B, and 1. After one has secured a start by the purchase of bulbs, this plant will multiply and take care of itself. It needs rich, soft soil, and a fair supply of moisture and shade. It is very largely used in small gardens throughout the eastern section of the United States. In the vicinity of Waco there is a variety which is pink in color and is very desirable as a cultivated plant. Commercial.

*Hesperaloe parviflora* (Torr.) Coulter. Red-flowered Yucca. Very desirable for a specimen plant or to use as a background in flower plantings. It has yucca-like leaves and tall but not straight fruiting stems, which bear small yucca-like flowers that are red in color and are so persistent that the plant appears as if in full bloom for months after the seed have ripened. The plant is a native of sections 3 and 5 but will grow anywhere in the state that it receives protection, and should be in every rock or desert garden. Commercial.

*Melanthium virginicum* L. Bunch Flower. This is a peculiar member of the lily family. It is found in Texas in sections 1 and 2. When not in bloom it appears as a bunch of coarse grass. The leaf blades are grass-like and range from one to two feet in length. In mid-summer it puts up a cluster of flowering stalks two to three feet high which bear many cream-colored lily-shaped flowers. After the fruit is set and ripens, the flowers do not fade but turn green, thus prolonging the ornamental periods of this plant for several months. This plant is used but little as an ornamental, but from trials made in Texas and elsewhere the plant will thrive in any location where soft soils and some moisture exist. It needs open sunlight. It is a perennial and persistent. A cluster of the roots of this plant when once established will maintain itself.

*Nolina Lindheimeriana* (Scheele) S. Wats. This near relative of the bunch grass is often called Ribbon Grass. It produces a heavy rosette of leaves about one-half inch in width and eighteen to twenty inches in length. In early summer it puts up a seed stalk which resembles a miniature yucca, rising to a height of eighteen to twenty inches and producing a number of



small yucca-like flowers followed by small black seed capsules. This plant is native to sections 4, 4B, 1, and 5, but will thrive anywhere within the state. Nowhere is it commercial. It is a good addition to any collection of yuccas or desert plants, or as a member of a rock garden association.

*Nolina texana* S. Wats. Bunch Grass. The common name of this plant is a misnomer as the plant is a definite lily. The leaves produced are low grass-like blades, and some of them are three feet in length. The flower clusters which are borne early in the spring come from the ground at the base of the plant. The flower stalk is pink and about eighteen inches in length. It bears small white lily-like flowers. As the seed ripens, the stem raises itself so that the seed are held above the ground. This plant is excellent for border specimen plants or as cover for the bases of trees. The plant is native to sections 4, 4B, and 5, and will thrive in any section of the state. It was well known to the early settlers who used the leaves for thatch material, to make baskets, tie corn tops, and hang bacon. On the Edwards Plateau, where it is most common, it furnishes large amounts of browse material during the parts of year when grass is out of the question. Commercial.

*Schoenocaulon Drummondii* A. Gray. Green Lily. A little-known lily, common to the most of Texas. It reaches its greatest population on the Rio Grande Plains but is found as far north as Dallas. It is a perennial and has grass-like leaves from six to ten inches in length. During the summer it produces three or four spikes of small white lily-like flowers. As the seed ripens and pods enlarge, the flowers turn green and the bloom and seed pods give a very odd appearance. This little plant is a nice addition to any garden in which a specialty is made of bulb plants. It is also a good addition to a rock garden as it fits in this association.

*Smilax laurifolia* L. Laurel-leaved Smilax. This smilax has smooth dark green leaves and few thorns on the vines. It grows to extreme length and is sought after for decorations. Native to sections 4, 4B, and 1 and growing to great length and age, it is easily transplanted as it bears large tuberous roots. Each tuber will produce a new vine. This plant should be largely used in that part of Texas east of Austin. It makes a beautiful cover for arbors or rock walls.

*Smilax Pseudo-china* L. Chinese Smilax. Native of sections 7A, 4A, 4, 4B, and 1, this smilax-like laurifolia is very largely used and in some places cultivated for ornamental purposes. The few thorns and hard green leaves which last for days as a cut decorative make it valuable as an ornamental. It also can be propagated by the division of tuberous roots.

*Trillium pusillum* Michx. Native of piney woods of East Texas but will grow under cultivation in sections 4A, 4, 4B, 1, and 2. This peculiar plant with only three leaves and one peculiarly colored flower is an oddity which makes an addition to the garden. It should be largely used where only a small place is available and an attractive assortment of plants is to be grown. This species like other Trilliums can be purchased from the florist.

*Yucca aloifolia* L. Aloe-leafed Yucca. Like all of the genus, this plant belongs to Texas and is a part of the landscape. It should be used wherever possible because of its stateliness, longevity, and ease of cultivation. This species is a native of the Gulf Coast of Texas and is about the only Yucca which does well in the eastern part of sections 1 and 2.

*Yucca arkansana* Trel. Yucca. Common in sections 4, 4B, and 1 and does better in that part of the state than any other species. This plant should be very largely used in roadside plantings.

*Yucca glauca* Nutt. Yucca. This is the common yucca of sections 7 and 7A. It is also found in 4A, 5, and 6 and will grow anywhere that it is cared for; however it is better to use this plant for roadside and park work in the sections where it is native.

*Yucca louisianensis* Trelease. Early Yucca. This is native to sections 4, 4B, 1, and 2. It is a short-leafed Yucca blooming in March and April and having large clusters of greenish-white, pear-shaped flowers. Differing from most yuccas it has underground root stalks which are parallel to the surface of the ground. This Yucca is an addition to any collection of plants of this general nature as it blooms long before most of the species.

*Yucca macrocarpa* (Torr.) Coville. Western Dagger. Native to sections 7, 7A, and 5. It takes the place on the plains which *Yucca Treculeana* Carr holds in sections 4, 4B, 2, and 3. The plant grows to a height of twenty feet and when properly cared for is a splendid ornamental which should be used in all floral plantings especially where large buildings and roadside parks are to be served.

*Yucca rupicola* Scheele. Twisted-leaf Yucca. This is a native of sections 4A, 4, 4B, and 5. It has smooth green leaves which are more or less turned on their longitudinal axes. It bears the regular yucca fruit stalks and blooms in June. It is the most common yucca throughout central Texas. It should have a place in every collection of yuccas or in every rock garden. It also is valuable for roadside and park work.

*Yucca Treculeana* Carr. Spanish Dagger. Native of sections 4A, 4, 4B, 2, 3, and 5. This tall, heavy-set yucca is representative of southeast Texas. It produces huge clusters of pink to white flowers in February and March. There is no plant that has a more stately appearance when it is given care. It will grow to considerable height and in old age becomes a much branched tree. The most beautiful specimens are those which bloom at an age of from two to three years. This plant is so widely used that everyone is familiar with it.

#### DIOSCOREACEAE

*Dioscorea villosa* (*D. paniculata* Michx) L. Wild Yam. The northern representative of the yam family of the Tropics, this species is a low-growing vine, annual above ground from a perennial fleshy root stalk. It bears numerous pale green, beautifully-veined leaves about two inches

long, in late summer bearing a cluster of small white flowers which are followed by an ornamental cluster of peculiarly shaped seed pods and which will persist throughout the winter. The plant will attract attention wherever grown and being a perennial makes an excellent vine for small trellises or to cover a porch post. Native of sections 4B and 1 and will give good service also in sections 4A, 4, and parts of 5.

### AMARYLLIDACEAE

*Agave americana* L. Century Plant. The most common agave in cultivation. It will do well in any section of the state; however in sections 3, 5, 6 and adjacent parts it grows as a native. While called century plant, a bloom may be looked for in eighteen years from seed or offset. This plant has been used so extensively that the heavy rosette of leaves form a part of the landscape in Texas. Because of the enormous size of the flower stalks this plant is worthy of care through the long period of years which it takes to secure the bloom.

*Agave heterocantha* Zucc. One of the common Lechuguillas. It is a native of section 3. The leaf blades are about eighteen inches long, dark green with a lighter stripe down the center. The thorns on the edge of the leaf differ in length. Similar to the century plant, this species requires about twelve years from seed to flower. The seed stalks are from fifteen to twenty feet in height and bear spikes of small flowers which are mostly stamens. The plant dies as soon as the seed commences to ripen.

*Agave lecheguilla* Torr. This plant is the characteristic agave of sections 5 and 6 where it is dominant. It is similar to other agaves in manner of growth but is smaller. The flower stalks seldom are more than ten to twelve feet in height. No collection of yuccas or any Western garden is complete without one of these plants.

*Agave maculosa* Hook. (*A. maculata* Engelm.) This agave is a native of sections 4, 4B, 1, and 2. It is a succulent, soft leafed form of the century plant family. The leaves are dark green with red-brown splotches which give it the common name of Rattlesnake Plant. The flower stems are from two to three feet high and bear from twelve to twenty tuberoselike flowers, pink to dark red in color. It is a perennial and hardy as far north as Austin and probably throughout the state with the exception of section 1. This plant should be used in place of cultivated tuberoses, Amaryllus, and similar species.

*Agave variegata* Jacobi. Texas Tuberose. This species is very similar to the one above and is confused with it. The leaves are smaller and more numerous, the flower stalks more slender and red in color. The plant is more hardy than *maculosa*. It is a native of the same territory and probably will grow anywhere in the state.

*Agave virginica* L. The eastern representative of the agave family, it ranges from the southeastern states through as far as San Antonio. The leaves are green, soft, and succulent. Its flowering stalk reaches a

height of from four to ten feet and bears small pink agave flowers. At the time that the flowering stalks start to grow, large red splotches appear on the green leaves. The plant is quite ornamental and belongs in rock gardens or as specimen plants to occupy places along fences or walls. It is widely spread but uncommon even in nature. It is easily grown both from the roots and from seed. In Texas it is found wherever sandy soils and timber occur east of San Antonio.

*Cooperia Drummondii* Herb. and *Cooperia pedunculata* Herb. White Rain Lily. These are the common white lilies which appear shortly after every rainy period; native to almost all of Texas, and because of their peculiarity of blooming several times during the season following rains and the fact that they need no cultivation, they are extremely popular with floriculturists in the northern and eastern parts of the United States. This species can be planted in a lawn with the surety that they will not in any way injure the looks of the lawn but after each good rain will produce a beautiful white flower which will last from two to three days. The bulbs are carried by all dealers.

*Hymenocallis galvestonensis* Baker. White Spider Lily. This is a native of swamps and wet meadows in sections 2 and southern parts of sections 4B and 1. The bulbs are quite large and are from ten to fifteen inches under the ground, which makes it extremely hard to obtain. They are carried commercially. The plant produces several flowers and blooms from early spring to late fall, individual plants often reaching a height of from three to four feet. The flowers are peculiar in that they are white, about two inches in diameter, but each petal bears a long white streamer. It is a very desirable species for water planting whether in natural water courses or in lily pools.

*Zephyranthes texana* Herb. Yellow Rain Lily. This beautiful yellow lily-like plant is not well known although it occurs in large numbers in sections 4A, 4, 4B, 2, 3, 5, and probably elsewhere. The flowers occur after every rain of more than one-half inch which falls between June and November. The flowers can be looked for in thirty hours after the rain comes. In many places the ground is completely covered with the bright yellow flowers which are copper red on the outside, a fact which gives the rather common name of copper lily to this plant. The bulbs are about three-fourths of an inch in diameter and occur about two and one-half inches below the surface. The leaves resemble grass and grow in sodded areas. The flowers open for one day and a bloom seldom lasts for more than three days. This accounts for the fact that many people who live where this plant is common have never seen it in bloom. A small planting of these bulbs in a lawn or in a plat given over to bulbs is a very showy addition to any garden. Several other species of yellow rain lilies occur in the state. There is so little information that anyone interested in plants should collect and grow yellow rain lilies until their habitat is definitely known. Their beauty will pay for the care given them.



## IRIDACEAE

*Herbertia Drummondiana* Herb. A blue-flowered lily-like plant which is almost unknown, though occurring frequently in sections 4, 4B, 1, 2, and 3. It can be looked for wherever shade, moisture, and soft soil occur. The flowers open in May and June especially after rains. The leaves are grass-like six to eight inches high. The flowering stalks bear from two to three flowers one and one-half inches in diameter with three blue sepals and three much smaller white ones. It has a bulb about one-half inch in diameter which is found at a depth of about three inches. It can be transplanted at any time and will bloom in its regular season. If one desires to move bulbs, it should be done immediately after the flower falls or the plant well marked as the entire plant disappears in a few days after flowering.

*Herbertia Watsoni* Baker. A species bearing a flower about two and one-half inches in diameter and reaching a height of from eighteen inches to two feet. Three sepals are bright blue and three are mottled with yellow. It is a native of sandy parts of southeast Texas but will grow anywhere within the state when given the proper care. These two species should be sought and grown because of the beauty of their flowers which rival that of cultivated lilies. The last and probably two other larger species of this genus are native to section 3. Flower lovers should be on the lookout for such plants and secure the bulbs for cultivation.

*Iris fulva* Ker. *Iris*. (*I. cuprea* Pursh.) Bronze *Iris*. Native to sections 1 and 2 where it grows in deep swamps in the edge of standing water, this plant will probably do well in collections of *Iris* if proper location and care are given. Commercial.

*Iris virginica* L. (*I. carolinianum* S. Wats.) A tall-growing *Iris*. Native to the Gulf Coast swamps and marshes, it will probably do well where water plantings are being made in the southern parts of sections 4A, 4 and 4B. With care it can be grown in any *Iris* garden. There are at least three other species of *Iris* native to Texas. All of these should be added to the *Iris* gardens and water plantings of the southeastern half of the state.

*Nemastylis acuta* (Bart.) Herb. Celestial or Dragon's Head. An *Iris*-like plant growing to the height of eighteen inches and bearing a light blue flower almost two inches in diameter, it blooms in April and May. Like its relative this plant is worthy of cultivation in any yard or garden. All the cultivation needed is to protect the plant from livestock. The plant will grow very nicely in beds with other bulbs without coming into competition.

*Nemastylis coelestina* (Bart.) Nutt. Celestials or Dragon's Head. A small *Iris*-like plant growing to a height of about one foot, bearing three to five light blue flowers one and one-half inches in diameter. This plant is a native to sections 1 and the southern parts of 4A, 4, and 4B.

It blooms in April and May. When found in the wild it should be marked, the bulbs procured later and moved to protected locations. The bulbs are found about four inches underground. They should be planted about the same depth and if protected will give a bloom each spring.

*Sisyrinchium* Blue-eyed Grass. To this genus belongs a large number of very similar species which are found native over all of Texas. These species agree in having grass-like leaves not more than three to four inches in length and bear numerous blue flowers throughout the spring and early summer. The plants very much resemble grass as they form sod that are mistaken by many for species of grass. All of the species are very well adapted to cultivation. They make beautiful border plants and because of the varying shades of several species a solid bed made up of this genus presents a most beautiful appearance in the spring. After that the plant appears as a bunch of wide-leafed grass. It will pay anyone to procure and grow the species of blue-eyed grass native to his locality and to bring in others as he may procure them.

### MARANTACEAE

*Thalia dealbata* Roscoe. (*T. barbata* Small.) Powdery Thalia. A most beautiful but almost unknown plant as its native home is in deep swamps. It is found in sections 4B, 1, and 2. The plants consist of several leaves. Each leaf consists of a green stem about twenty inches long which bears an ovate, canna-like leaf. From the center of the cluster of leaves arises a tall bamboo-like stem which bears several clusters of bright purple flowers each of which is about one-half inch wide. They are followed by nut-like fruits about one-half inch in diameter. For water planting or a lily pool there is no more beautiful plant. They are hardy as far north as Austin and will grow with a slight protection throughout the remainder of the state. These plants require much water and some shade. They are adapted to streams and lake shores. Commercial.

### ORCHIDACEAE

*Spiranthes* Orchis. Because of the peculiarity of the life history of orchids of which there are about thirty species in the state it requires an expert to succeed in raising them. If one has shade, moisture, and the inclination, it is possible that all of the species in the state which grow on their own root system can be raised. The small grass-like plants reach a height of ten to twenty inches and bear a small yellowish white flower which has a peculiarly sweet odor. Those wishing to try growing Texas orchids should mark the plants and after the flowers have seeded procure and bring home the root clusters. By transplanting a considerable portion of the soil with the root cluster intact, success can be hoped for.

### SAURURACEAE

*Tipularia cernuus* (Pursh) Nutt. Lizard's Tail. An interesting plant which occurs in swampy places through sections 4A, 4, 4B, 1, 2, 3, and probably elsewhere in Texas. It can be grown in any sandy place where shade is



abundant. It is most easily grown by obtaining a root cluster; however after it is started it will seed itself. It is recommended for planting where water seeps through embankments especially along irrigation ditches.

*Anemopsis californica* Hook & Arn. This plant is known only from two places, one in section 6 and one in section 7; however, it will grow anywhere throughout the state if it is planted in marshy sunny places. It has white anemone-like flowers about one and one-half inches in diameter which are produced in abundance throughout the year. As it is native as far north as Lubbock it undoubtedly will do well anywhere within the state where proper moisture is supplied. It is worthy of a trial by anyone interested in water-loving plants.

### SALICACEAE

*Populus angustifolia* James. This is the cottonwood of Trans-Pecos Texas. It should be planted through that section. It also should do well in parts of sections 7 and 5.

*Populus deltoides* Marsh, var. *virginiana* (Foug.) Sudw. This is the native cottonwood of central and eastern Texas and where cottonwoods are planted it will give better service than any other.

*Populus tremuloides* Michx., var. *aurea* (Tidest.) Daniels. Aspen Popple. This small-leaved, white-barked tree is known only from Trans-Pecos Texas. It should be added to the list of cultivated trees as it makes a quick growth and is quite ornamental. It will grow throughout sections 7, 7A, 4A, 4, and 4B. Where one desires a cottonwood it is advised that native plants be secured as they will give much better results than those brought in from elsewhere. There are two or three species of cottonwoods known to each of the floral areas of the state, and from these, selections should be made for local plantings.

### GARRYACEAE

*Garrya Lindheimeri* Torr. Silk Tassel Bush. A native of sections 7A, 4A, 4, and 5 and will grow anywhere in the state if planted and given a small amount of protection. Its growth is regulated by moisture and soil. Where the moisture supply is small the plant is a shrub, but where moisture is plentiful, it becomes a tree twenty to thirty feet in height. The leaves are almost coriaceous and covered with considerable wool. In early spring it bears silky white spikes from which the small pink flowers protrude. In the fall these spikes are followed by clusters of blue berries. The plant is not common even in its habitat but is sufficiently beautiful to warrant its cultivation. It is most easily obtained by growing from seed.

### MYRICACEAE

*Myrica cerifera* L. (*M. carolinensis* Mill.) Wax Myrtle. This is one of the shrubs from which the bayberry candles of literature are made. The whole plant is odoriferous. The seed pods and some of the leaves are covered with white wax in the fall of the year. It is a native to

sections 4B, 1, 2, and probably others wherever swampy lands occur. The bush generally grows to a height of three to four feet and is made up of small wand-like branches covered with yellow green leaves. It does at times assume tree-like form. Wherever swamp lands occur and are to be beautified or water plantings to be made, the wax myrtle makes a good hedge or background. It should be used very largely on the Gulf Coast and in East Texas.

### JUGLANDACEAE

*Carya*. Ten species of hickory occur in Texas. All of these have been transplanted or grown from seed for use as ornamentals along streets or in parks. Several nurseries offer species of hickories for sale. The best known of this group is *Carya pecan* (Marsh) Engelm. & Graebn., which is properly considered the State Tree of Texas. All hickories are ornamental, and none are difficult to transplant, or to grow from seed. In choosing species one should take the tree which grows in the neighborhood. It is to be remembered that certain hickories grow in river bottoms and damp locations. Such trees should be selected for roadside plantings where the road crosses such damp sections. While seldom planted, *Carya myristicaeformis* (Michx. f.) Nutt., a river bottom hickory growing in sections 4, 4B, and 1, should be planted where lake and river fronts are to be beautified. The peculiarly formed nuts, while not edible, are attractive.

*Juglans major* (Torr.) Heller. A very attractive walnut. It is found native only around the west and south borders of section 7A. It is a large tree as compared with other trees in its territory. It has the bark of the black walnut but the leaves are similar to pecan. The fruits of this tree are not over three-fourths of an inch in diameter and are very smooth. This tree has been quite largely distributed by nursery-men throughout sections 7, 7A, and 5. It probably will do well even farther east.

*Juglans nigra* L. Black Walnut. This is a Western form of black walnut of commerce. In Texas east of San Antonio it reaches sufficient size to furnish lumber. It has never been popular for planting. It should, however, be used for roadside and park work. It will thrive throughout sections 7, 7A, and 4A, which makes it a desirable tree. It is best to obtain the seed where the tree is to be planted.

### BETULACEAE

*Alnus rugosa* (Du Roi) Spreng. (*A. serrulata* Willd.) Alder. This tall-growing shrub, which is the Western representative of the alder so popular as an ornamental in the northeastern United States, deserves cultivation here. It is native to sections 4B, 1, and 2 and will also grow in 4A and parts of 3 and 5. It grows as a bush but with straight stems covered with brown bark and bearing withe-like branches covered with numerous small green leaves. It is one of the first plants to put out leaves in the spring and during the summer and fall is covered with

cone-like seed pods which are very attractive to small birds. As a hedge or screen, this plant offers a diversion from the ordinary plants used.

*Betula nigra* L. Black or River Birch. A common tree in sections 4B and 1 and will grow in sections 4A, 4, and parts of 3 and 5 if given a chance. It requires moist conditions and makes a very desirable addition to any park where a lake or water course is included. For roadside plantings it is one of the trees that should be used where the highways cross wide valleys. The bright yellow foliose bark and shining yellow twigs make this tree very ornamental. Commercial.

*Carpinus caroliniana* Walt. Horn beam. A little known tree grown in sections 4B and 1 where like birch it grows along rivers and in swamps. It is called Horn Beam because of the peculiar fluting of the branches which resemble the antlers of an elk. The tree is hardy throughout the eastern half of the state and should be used where damp locations occur along roads and in parks. The tree grows to considerable size. It also is one of the plants whose leaves turn bright yellow in the fall of the year.

*Ostrya virginiana* (Mill.) K. Koch var. *lasia* Fernald. Koch. Hop-Horn beam. So called because of the fluted branches and seed pods which resemble the hops of commerce. Differing from its relative, the Horn Beam, this tree grows on dry hill slopes and instead of a smooth green bark has brown shredded covering something like cedar. As a whole the tree resembles a small round topped elm until the fall of the year when its fruit develops, at which time it has a most distinctive appearance. It should be largely used in Texas east of Austin in park and roadside plantings. It also should be used as a specimen tree in small yards because of its compactness, early maturity, and freedom from water sprouts. Commercial.

## FAGACEAE

*Castanea floridana* (Sarg.) Ashe. Chinquapin. This is a tall growing shrub bearing fruits similar to *pumila* but does not reach the size of a tree. This shrub has been cultivated in numerous towns in East Texas where it makes a very attractive specimen plant in yards and along roadsides. It doubtless will give service in sections 4 and 4B, as well as 1 where it grows as a native.

*Castanea pumila* (L.) Miller. Chinquapin. A small round-topped tree somewhat resembling the eastern chestnut. Native of section 1 and growing in cultivation in sections 4 and 4B, the tree is rather decorative as in early spring it is covered with many cream-colored small flowers and in the fall of the year produces heavy groups of chestnut-like fruits. The nuts are considered superior to the eastern chestnut and in section 1 a grove of these trees is looked upon as a valuable asset. It can be raised from the seed more easily than by transplanting. Commercial.

*Fagus grandifolia* Ehrh., var. *caroliniana* (Loud.) Fern. & Rehder. Beech. This magnificent tree occurs as a native in sections 4B and 1 and has grown to some extent in sections 3 and 4. It is one of the most beautiful of the eastern forest trees. Its buttressed trunk and smooth gray-green bark call attention to it at once. It should make a fine tree for roadside planting where there is considerable shade and the trees are needed to relieve the monotony of a pure stand forest.

*Quercus*. There are sixty-two species and varieties of oaks in Texas, ranging from low bushes to the largest trees which are native to the state. This is probably the most valuable genus of plants within the state.

*Quercus alba* L. White Oak. Native and should be used for roadside and other plantings in sections 4A, 4, 4B, 1, and part of 3. The white oak is probably the most popular tree where permanent plantings in parks are being made.

*Quercus Brayii* Small Brays Oak. Found only in section 5 but will probably give good service in the adjacent parts of 7A, 4A, 4, and 3. It belongs to the chestnut oaks group, grows to considerable size, and is covered with large blue-green leaves. The acorns are about one inch long, black, and sought after by livestock, especially by turkeys. The trees are found in creek and river valleys throughout the eastern part of the Edwards Plateau.

*Quercus breviloba* (Torr.) Sarg. White Oak Shinnery. This is the shinnery oak or scrub white oak of the Edwards Plateau. It is quite valuable as a browse plant and is used in plantings on the Edwards Plateau for shade trees and to stop erosion. This small white oak should be planted in large quantity for erosion control in sections 7A, 4A, 4, and 5.

*Quercus Durandii* Buckl. Durand's White Oak. This oak, which has been called the Texas white oak, is almost unknown. It occurs in a few isolated groves through sections 4B and 2. The tree resembles a live oak in general appearance but is more tall and slim, grows more rapidly and should be used as a substitute for live oak in plantings in sections 4, 4B, 1, and 2. The most noted grove of this oak is at La Porte.

*Quercus Havardii* Rydb. Havard's Shinnery, Plains Shinnery Oak. This little known oak is found in section 7 where it is the dominant plant in twelve counties. This-oak-covered section together with the adjacent parts of New Mexico which are covered with the same species is said to be the largest forest of pure stand oak in the United States. The tree seldom reaches a height of more than two feet and generally not over eight inches. The bulk of the oak is underground. Short branches bearing characteristic oak leaves appear above the surface of the sands and bear acorns very large in proportion to the plant on which they occur. This shinnery oak spreads both by seed and by underground root stalks. It is the most valuable of all sand binders and will probably grow in any section of Texas where sand binders are needed. It can be transferred by taking out the root stalks or by sowing the acorns. In numerous towns in West Texas and eastern New Mexico this shinnery oak is used to good advantage as a cover for park sites in towns and in yards.



*Quercus Laceyi* Small. Lacey's Oak. Tall growing tree of the white oak group. It is found in considerable numbers in sections 4A, 4, and 5. It is valuable as a shade tree and grows with considerable rapidity. It can be grown anywhere on limestone soils, thus becoming valuable as a shade tree for sections 5, 7A, 4A, and 4.

*Quercus lyrata* Walters. Over-cup Oak. Native of Texas east and south of College Station. It is found growing in river valleys but will grow anywhere within that section of the state. It has been widely planted in city parks and along roadsides. Commercial.

*Quercus macrocarpa* Michx. Bur Oak. Bears the largest acorns of any tree in the state; should be planted more abundantly. It has the largest leaves of any Texas oak and produces acorns which sometimes reach a diameter of more than two inches. The trees will grow in sections 7A, 4A, 4, 4B, 1, 2, 5, and probably in 7. It is probably the most easily grown of all oaks as the matured acorns when planted will germinate at once and in ten years' time the tree will be from four to six inches in diameter.

*Quercus nigra* L. Water Oak. This is the smooth-barked, entire-leaved water oak native to sections 4B, 1, and 2. Because it will grow anywhere on the Gulf Coast and because of the beauty of the tree, the water or black oak should be largely planted. In several of the cities on the Gulf Coast it is the most popular oak with the city foresters.

*Quercus Phellos* L. Willow leaf Oak. This oak is found in the same territory and occupies the same location as the water oak. It, like its relative, should be widely planted throughout the Gulf Coast and extreme East Texas. Like the water oak it requires considerable moisture. It is probable that both of these oaks can be grown in water plantings in sections 4, 4B, and 3.

*Quercus rubra* L. Red Oak. This magnificent tree which is native to sections 5 and 6 will grow in sections 4 and 2 and is a very desirable tree for roadside and park work. The tree grows to considerable height producing a heavy foliage of leaves, dark green above and silver gray below. It is a favorite in the city of Houston.

*Quercus Shumardii* Buckl. Shumard's Red Oak. This is the common red oak of East Texas. Native to sections 4A, 4, 4B, and 1 and will probably give good service in 7A, 2, 3, and 5. It is easily transplanted in the districts where it is native. The coarse brown bark with the lobed light green leaves makes this very desirable for yard plantings.

*Quercus stellata* Wang. (*A minor* Sarg.) Post Oak. This species including its varieties occurs in every section of the state. It has in its favor the fact that where the native variety is used, the trees will grow under the poorest conditions. Where a permanent tree that requires little care and will give service for many years is needed, the native variety of post oak should be used. It can be grown from acorns or transplanted.

*Quercus texana* Buckl. Spanish Oak. Because of the habit of this tree of turning brilliant colors in the fall, it has become popular for city and park plantings. It is native of the Edwards Plateau country. It is a common oak in section 5 and can be grown in parts of sections 7A, 4A, 4, and 4B where soils occur containing considerable lime.

*Quercus velutina* Lamareck. Black Oak. This is the largest and most magnificent of the red oak group. It is native in sections 5 and 6 and has proved to be of service in plantings in 4, 2, and 3. It probably can be grown in sections 4A and 5. Its large green leaves and enormous size make it a very desirable tree.

*Quercus virginiana* Miller. Live Oak. The possibilities of this oak are so well known that it needs no description; however, it is to be said that the live oak is of too slow growth for most purposes and that such oaks as *Quercus Durandii*, *Quercus rubra*, *Quercus velutina* and *Quercus Laceyi* should be used to supplement *virginiana*.

A number of other oaks especially those which are native to Trans-Pecos Texas are suggested for trial; however nothing is known of their actions when transplanted to other sections, and because of lack of a supply of their seed or trees they can be recommended only to specialists.

### ULMACEAE

*Celtis laevigata* Willd. Smooth-leaved Hackberry. While hackberries are not recommended for planting because of their short life and the fact that they harbor plant diseases and insects, they fill a need for a rapid growing shade tree and probably will always be planted in increasing numbers. The smooth-leaved hackberry is a native of the Gulf Coast country and will grow anywhere with the exception of sections 1 and 6.

*Celtis pallida* Torr. Granjeno. A bush-like shrub which is a honey plant and bears numerous berries in the fall which are collected for jellies and in many places sold under the name of algeredo. The bush bears numerous short thorns. It is recommended for planting where longevity and erosion control are desired. It will grow in sections 7A, 4A, 4, 4B, 2, 3, 5, and 6.

*Celtis reticulata* Torr. Rough leafed Hackberry. Native of sections 7A, 4A, 4, and 5 and will grow in any part of the state. These two species are the most commonly cultivated. They are easily grown from seed, transplanted from the wild, or can be purchased.

*Ulmus alata* Michx. Winged Elm. The most common elm in Texas. It reaches the height of its popularity in sections 4A, 4, and 5 but will grow anywhere as it is found in the Lower Rio Grande Valley and along the Gulf Coast. It is differentiated from other elms by the cork-like wings found on the water sprouts and young branches. It is suitable for roadside, park, and yard plantings. The large amount of seed which it produces makes it very easy to secure small trees for plantings.



*Ulmus americana* L. American or Feather Elm. The largest of the native elms. It is found in every section of the state; however in the southwestern portion the trees have been introduced but have maintained themselves and have become native. The tree needs moisture and care.

*Ulmus crassifolia* Nutt Cedar Elm. This low-growing elm with the small hard leaves is native of sections 7A, 4A, 4, 4B, 3, 5, and 6 and found to considerable extent along the Rio Grande from El Paso to the mouth of the river. While this elm is of low growth it is the most persistent and easily grown of all the elms. Wherever a tree is needed to occupy territory where other trees have failed this is the tree to be used. Commercial.

*Ulmus fulva* Michx. Slippery Elm. This is so called because of the thick mucilaginous bark which at one time was a very important drug in the treatment of fevers. This low-growing heavy set elm is not of common occurrence but is found to some extent in sections 4A, 4, 4B, and 5. Where one wishes a special tree, the slippery or red elm is of value. Commercial.

## MORACEAE

*Broussonetia papyrifera* (L.) Vent. Paper Mulberry. This tree was introduced into the state of Texas as food for silkworms. It has become a weed among trees. It has nothing in particular to recommend it except that it will grow anywhere and without care. Everywhere it is found it is an unsightly object. It should be replaced by other and more popular trees.

*Maclura pomifera* (Raf.) Schneider Bois d'Arc. This peculiar tree which is noted for its extremely dark-colored wood is a native of sections 4B and 2 but will grow anywhere in the state that it is planted. The young plants are covered with very stout thorns which led to the exploiting of this tree as a hedge plant between 1870 and 1885, during which time hedges were planted throughout the state of which there remain today unsightly trees which mark the attempt to make Texas a land of hedges. The tree has little to recommend it in general planting; however in parks specimen trees of this species should be maintained and planted along roadsides to relieve the monotony of a continuous avenue of the same species.

*Morus alba* L. Russian Mulberry. This tree like Bois D'Arc was introduced through Texas in the 1870's and '80's. This was one of the plants which was used in the attempt to establish windbreaks in the north Panhandle country, where today small unsightly groves testify to the attempts of early settlers to beautify and protect their farmsteads. In other parts of Texas it was introduced as a fruit tree where it has gone wild and become a nuisance. It is recommended for plantings only in the sandy parts of section 5 where this tree will grow and produce fruit when other trees fail.

*Morus microphylla* Buckl. Mountain Mulberry. Native of sections 7A, 4A, 4, and 5. It is a neat looking miniature mulberry tree with leaves about one and one half inches across. It is found native only among the rocks and hills of sections mentioned; however when transplanted it will grow in sections 7A, 4A, 4, 4B, 3, and probably elsewhere. It makes a very nice addition to any collection of small trees. It is recommended for yard plantings.

*Morus nigra* L. and *Morus rubra* L. The red and black mulberries. These are native to sections 4A, 4, 4B, 1, 3, and 5. While of slower growth, they are more desirable trees than *Morus alba* and produce superior fruit. They are easily grown, are of long life, and adapt themselves to open or park plantings. Commercial.

### LORANTHACEAE

*Phoradendron flavescens* (Pursh.) Nutt. American Mistletoe. This partially parasitic shrub will grow on almost any tree over a large part of Texas. As a rule it is detrimental to plants under cultivation. As a curiosity and a parasite grown under control, a mistletoe plant on a tree or shrub in a yard will attract a great deal of attention and is ornamental. Such a plant may be procured by the placing of the ripe mistletoe berries on the portion of any tree where it is desired to have the plant. It will require from two to three years from the placing of seed to the first blooming of the mistletoe. Mistletoe will live through many years.

*Phoradendron juniperinum* Engelm. Cedar Mistletoe. This mistletoe is a native of Trans-Pecos Texas but is almost unknown even to those living in that section. Where one has native junipers as ornamentals and desires plants of much interest, it will pay to import the cedar mistletoe berries and attempt to grow them on the junipers already established. This has been done in several cases with success.

### ARISTOLOCHIACEAE

*Aristolochia brevipes* Benth. var. *acuminata* S. Wats. (A. Watsoni Woot. and Standl.) Prostrate plant having branches from one to two feet long and bearing throughout the spring and summer most peculiar colored and shaped flowers. The plant has a heavy perennial underground root making it easy to transplant from the wild. It can also be raised from the seed which are produced abundantly. Seedling plants are numerous around well established plants. The plant is a native of sections 5 and 6 but will also grow in the southern parts of sections 7, 7A, 4A, and 4, and in the northern parts of section 3.

*Aristolochia hastata* Nutt. Nash. Snake Root. The genus *Aristolochia* or Dutchman's Pipe group is a very interesting one because of the peculiarly shaped and colored flowers. All of those growing native to Texas are little known but make a fine addition to the cultivated plants of the state. A collection of these plants makes as attractive a garden as can

be imagined. Nash's Pipe Vine is the rare member of the group in Texas. It is found only in the sand flats of Sections 4B and 1. The plant consists of a number of clustered leaves which are almost grass-like, dark green in color, and arise from a heavy perennial tuber. In early summer and continuing throughout the season it produces peculiarly shaped and colored flowers from stems which arise at the base of the plant. The stems and leaves are dark green, while the flowers are varying shades of white and yellow. This is one plant which the grower can point out with pride as a very rare and showy plant.

*Aristolochia longiflora* Engelm. and Gray. Swan Flower. This very inconspicuous but most showy representative of the genus is found in sections 4A, 4, 4B, 1, 3, and probably 2. It is practically unknown even where it is common as it grows among grasses, and very much resembles certain species of *Panicum*. The plant itself comes from a deep seated tuberous root. It is a vine like plant bearing several lanceolate leaves about one-third of an inch wide and two inches long. These are green with a red-brown undercolor. The flowers are borne in the axils of the leaves from March until November. The flowers somewhat resemble the picture of a swan, the body of the swan being the future seed pod and the neck and bill the calyx tube. The flower itself will measure from one and one-half to three inches in length, depending on the soil. The flower is red-brown on the outside and on the inside of the calyx tube are spots of black surrounded by zones of brilliant yellow. The seed pods are six-sided capsules one-half by one and one-half inches in dimension. The plant can be grown by planting the tubers, or it can be grown from seed. This plant has been successfully grown in many places in Texas and as far away as Washington, D. C.

*Aristolochia reticulata* Nutt. This is a beautiful member of the genus which is native to sections 4B and 1, where it is to be looked for in moist heavy forests; however, it will grow anywhere that moisture and some shade are provided. The plant is vine-like, growing to a height of eight to ten inches. It produces some ten or twelve heart-shaped leaves which are dark green and almost coriaceous. The undersides of these leaves are very heavily veined and light gray. In summer the plant produces two kinds of flowers, small white ones just under the ground and large showy ones which resemble tiny Dutchman's Pipes above the ground. The entire plant has a pleasing medicinal odor. This plant has been successfully propagated in many places in East Texas and in plant collections outside the state.

*Aristolochia serpentaria* L. Virginia Snake Root. This is an almost vine-like form of the *Aristolochia*. It is native along the north edge of section 2 and in the southern part of sections 4B and 1. It is another almost unknown plant. It has ovate leaves and vine-like branches which reach a length of three to four feet. It is common in the deep shade of their thickets. It bears throughout the summer peculiar pipe-shaped flowers which have a long stem, giving it the common name of serpent vine. This species too has been successfully brought into cultivation in a number of places not only in Texas but outside the state.

*Aristolochia tomentosa* Sims. Woolly Pipe Vine. This is the famous Dutchman's Pipe Vine of seed catalogues. It is native to sections 4B, 1, and 2, and will probably grow anywhere in the state that it is given a chance. It is native as far north as St. Louis, Missouri, and as far east as Virginia. It grows as a perennial tall-growing vine producing large heart-shaped leaves which are covered with wool. Through the summer it produces numerous small brown to yellow pipe-shaped flowers which are followed by large capsules that are almost as ornamental as the flowers. This vine will give the best of service where a continuous shade is needed as the leaves are quite persistent. This is the only species that is commonly carried by dealers.

### POLYGONACEAE

*Brunnichia cirrhosa* Banks. Ear-drop Vine. This is a perennial vine belonging to the buckwheat family and is native along the water courses of eastern Texas. In cultivation it will do well in sections 4A, 4, 4B, 1, 2, and 5. It is a strong growing vine which needs soft soils and moisture. The stems grow to great length covering any support given the plant. Throughout the summer it produces flowers which are about one and one-half inches in length and resemble elongated buckwheat flowers. Cared for, this is a very ornamental vine and deserves a place wherever conditions are favorable and where vines are used to cover pergolas, fences, or trellises. It grows rapidly and assures one of a permanent shade accompanied by clusters of beautiful white flowers.

*Eriogonum Abertianum* Torr. A native of Trans-Pecos Texas. A tall annual covered with silky wool; leaves numerous and ovate; flowers borne in large clusters and rose colored. This plant doubtless can be grown in cultivation in sections 5 and 6, the southern parts of 7, 7A, 4A, 4, and 4B, and the northern part of 3. This plant is recommended to any experimenter who desires a very promising ornamental.

*Eriogonum coriaceum* Coult. and Fisher. A native of sections 7 and 6, and recommended for trial in sections 7A, 4A, 4, 3, and 5. A perennial plant growing to a height of about two feet; bearing very peculiar lanceolate leaves from three to five inches in length. These are borne at the base of the plant. It has long woolly flower stalks topped by clusters of yellowish-white flowers. The very fact that the plant is coriaceous and perennial makes it a thing desired for park, yard, and wayside planting. It should be tried by anyone interested in new plants.

*Eriogonum Havardii* S. Wats. A native of Trans-Pecos Texas. This plant consists of a large number of small dense rosettes arising from a deep-seated root stalk. Each rosette puts up from two to three bare stalks of pinkish-white *Eriogonum* flowers. It grows in shale flats and can endure much drought and adverse weather. While there is no record of this plant having been cultivated, there is no doubt that in the hands of the horticulturist, it will become a desirable plant for bedding or edging of large plantings.



*Eriogonum undulatum* Benth. A native of sections 7 and 6 and should be tried in sections 7A, 4A, 4, 4B, 3, and 5. An *Eriogonum* covered with silver white wool with oblong leaves, it bears long flower stalks with many silky white flowers. Individual plants vary in the color of the flower clusters from white to almost pure yellow. From the endurance of this plant as observed in nature, it will do extremely well under cultivation.

*Polygonella americana* (Fisch. and Mey.) Small. Joint Weed. Small perennial native to sections 4, 4B, and 1, where it grows in deep sands, to a height of about two feet; it is an evergreen and resembles a small cedar. During mid-summer and fall it is covered with white to pink buckwheat-like flowers. It can be transplanted and grown with success where planted in soft, sandy soils with some shade. It has been successfully transplanted in many parts of East Texas, and makes a very attractive plant.

*Polygonella articulata* (L.) Meisn. Coast Joint Weed. This resembles the one just described; a native of sea beaches along the Gulf Coast but will grow in sandy locations anywhere in section 2 and along the east coast of 3. An evergreen, it grows to a height of not more than one foot and bears throughout the summer clusters of small white buckwheat flowers. As an ornamental for sea coast towns where sandy conditions exist, and especially around sea beach hotels, this plant can be used to great effect. It is one of the few of the strand plants that can be grown under cultivation.

*Polygonum Hydropiper* L. Water Pepper. Annual, having red stems, light green lanceolate leaves, and numerous clusters of pink to dark red flowers. It is very useful for quick and beautiful cover. Where new excavations are to be hidden or low places are to be covered, the seed of this plant sown in early spring will insure a green and pink cover throughout the summer and fall. It is native to the Gulf Coast section of Texas but will grow anywhere there is a good supply of moisture; in places where this plant is not native, it is planted as a garden flower.

*Polygonum hydropiperoides* Michx. (*P. opelousanum* Riddell.) Small Water Pepper. A plant similar to hydropiper but an annual, it will live in standing water, and grow to a height of from three to four feet. This is an excellent plant for roadside ponds in river valleys. It is also desirable for water-fowl cover and feed. Small plants of this species make an excellent addition to lake and waterfront plantings in parks.

*Polygonum incarnatum* Ell. Native in sections 4, 4B, and 2. An annual Polygonum having light green leaves and rose-colored flowers; its habitat the banks of lakes and flowing streams. It should be used in plantings of like nature. It should be used to cover the banks of running streams which are affected by high winds. Under controlled cultivation it makes a beautiful cover for roadside planting in damp locations. It is also an excellent food plant for birds.



*Polygonum Persicaria* L. Lady's Thumb. Native to sections 4, 4B, and 2. One of the red flowered smartweeds. Because of its ease of growth and the character of the soil in which it will grow, this makes an excellent cover for newly-graded embankments. It is an annual a season's growth of which will help prepare the most coarse soils for the planting of more desirable species or for grass. Like the other members of this genus the plant furnishes excellent bird cover and food.

*Rumex hymenosepalus* Torr. Canaigre. Native to Texas west of San Antonio. It is a member of the dock group and resembles many of the common members of the family but has much larger leaves and produces a large number of tuberous roots. This is the tan plant of the Indians of the Southwest, where recent experiments give promise that it will become an article of commerce. It should be in every garden in sections 7, 3, 5, and 6, and the southern parts of 4A, 4, and 4B. It requires sandy soils and is best grown by planting small tubers in the fall of the year. New leaves will appear at Christmas. The plant will be in full bloom and soon disappear. The tubers will be ready to dig in July. As a specimen plant it attracts much attention by its huge rosettes of glossy green leaves and its spike of pink flowers in very early spring. When grown as an ornamental, it should be reset each year to do away with the increasing number of tubers.

### CHENOPODIACEAE

*Atriplex acanthocarpa* (Torr.) S. Wats. This is an *Atriplex* native to Trans-Pecos Texas, an evergreen shrub bearing an abundance of silver gray foliage and in the summer and fall covered by large seed capsules. The plant will grow in the southern parts of 7, 4, 4B, 3, 5, and 6. In section 6 it should be planted to increase the extent of windbreaks and especially as a cover for roadsides. In other sections it is useful as a windbreak and as an ornamental. A single plant of this species properly cared for is a plant which will be admired by all.

*Atriplex canescens* (Pursh.) Nutt. Chamiza. This *Atriplex* is the most widely distributed of any of its species in Texas but is found in sections 7, 7A, 3, 5, and 6, and parts of 4A, 4, and 4B. It is a gray-green shrub which bears numerous flowers that are followed by large seed capsules adding to the appearance of the shrub. It should be planted in large quantities in its native territory to aid in the prevention of erosion by water and wind. Where the plant is not native it is recommended for hedges which are used for ornament, for backgrounds for beds of flowers, and for a specimen plant.

*Eurotia lanata* (Pursh) Moq. Winter fat. A low growing shrub native to section 6 and the southern parts of 7, sometimes called White Sage. It is a valuable browse plant in Trans-Pecos Texas and doubtless under cultivation will be as valuable in sections 7, 7A, and 5. It has the valuable property of remaining succulent throughout the winter. It makes an excellent windbreak to prevent the blowing of soils, and for tying together the banks

of excavations and fills. This and its kindred *E. subspinoso* Rydb., which is native of the same territory, should be encouraged throughout the western parts of Texas. Attempts to increase the population of this plant by the sowing of seed have been very successful.

## AMARANTHACEAE

*Froelichia Drummondii* Moq. Snake Cotton. A tall wand-like plant which bears its basal leaves in fours, this species produces flowering stalks three to five feet high which are covered with white wool, and at the time its seed, which are also covered with white wool, are ripe, they produce the cottony appearance that gives the name to the plant. It is common in the sandy parts of sections 4A, 4, 4B, 3, 7A, and 7, and doubtless occurs throughout the state. This plant is more showy than any of the foliage plants belonging to this family and is as easily raised. It is an annual but the seed should be sown in October of the year preceding its bloom. It is an addition to any bed of *Amaranthus*.

*Gomphrena decumbens* Jacq. Wild Globe Amaranth. This plant so much resembles the cultivated species that it is scarcely distinguishable. This is stronger growing and produces more brilliantly colored flowers. A native of sections 3, 5, and parts of 6, it will grow anywhere within the state. Like the cultivated *Gomphrena*, it is one of the everlasting flowers. The seed should be collected as soon as mature and should be sown in the middle of winter as the plant must develop a root system before putting out the flowering stalks.

*Gomphrena Nealleyi* Coulter and Fisher. Gulf Coast Amaranth. This species is common in parts of 4, 4B, 2, 3, and 5. It is called the Gulf Coast Amaranth because of its abundance in sandy places on the Gulf Prairie. It resembles *decumbens* in looks and color, but the flower, in place of being a hemisphere, is a cylinder about one-third by three-fourths of an inch. Its bright red flowers make this very ornamental where a plant that can take care of itself is needed. It grows abundantly along roadsides in the vicinity of Goliad.

*Tidestromia lanuginosa* (Nutt.) Standl. A most common plant along roadsides in sections 7, 7A, 3, 5, and 6. This is the most ornamental of the so-called foliage plants and has the ability to make abundant growth under the most adverse circumstances. For planting where a cover is needed for loose or rough land along the roadsides, or in parks where single plants are needed for a background, or where an unsightly drain is to be hidden, this plant is excellent. It is gray-green and has almost the appearance of the ice or dew plants. The only objection to this plant is that it must be held in subjection; however, the same is true of all members of this group. This is highly recommended for those parts of Texas where blowing soil or sand make the raising of common gardens or flower gardens next to impossible. A windbreak of this species will be able to maintain itself in spite of blowing sand, thus forming a background which will protect more tender plants. It will grow anywhere in Texas.

**PHYTOLACCACEAE (Poke Weed)**

*Phaulothamnus spinescens* A. Gray. Snake Eyes. This peculiar withe-like plant, bearing minute flowers which are followed by white berries containing black seeds, has very rapidly come into prominence as a possibility as an ornamental in section 3. It is known to occur from Laredo along the bluffs of the Rio Grande to the Gulf, and northward to Corpus Christi. It has been transplanted with success and those who have utilized it feel amply repaid for having given this plant a place in their gardens. It is said to make a fine specimen plant. Its berries have a strong sweet flavor, and because of the family to which the plant belongs, it is probable that some chemical of value may be found in these berries. It is doubtful if the plant will grow except in sections 2 and 3.

*Phytolacca americana* L. Poke. This distinguished-looking plant is native to every section of Texas. Because of its abundance in some places it is looked upon as a weed and has never been given a place as an ornamental. It will thrive in any soft soil but prefers sandy, shady locations, and lives for many years producing an enormous tuberous root. In early spring it sends out a heavy stem bud much resembling asparagus. It is from these stems that the famous "poke salad" of the southeastern United States is made. The stems grow to a height of from four to ten feet. The bark is brilliant red and the leaves are ovate, dark green. It bears numerous clusters of small white flowers followed by purple succulent berries which are not palatable. As a specimen plant nothing growing in Texas will attract more attention.

*Rivina humilis* L. Pigeon Berry. A plant of much value as it is perennial underground and annual above in the northern parts of the state, and entirely perennial in the southern parts. It bears numerous heart-shaped green leaves and spikes of small white flowers which are followed by small bright red berries. The plant blooms and the seed ripens from April until frost. It is easily multiplied by root division. It makes an excellent edge for borders or backgrounds. In sandy soils it resembles a vine where the plant will cover a trellis with a beautiful cover of spikes of white and clusters of red.

**NYCTAGINACEAE (Four o'Clock)**

*Abronia fragrans* Nutt. Sand Verbena or Lasater's Pride. This plant is found growing wherever soft, sandy soils occur in Texas. It is quite common in the sand hills of sections 7, 7A, 4A, 3, and 6. This plant has been given considerable prominence in horticultural literature. The late Edward Lasater of Falfurrias made selection for color of this species and by publications made the plant a favorite among floriculturists. It will grow anywhere there are soft soils and a fair amount of moisture. Commercial.

*Acleisanthes longiflora*. A. Gray. Angel Trumpets. A prostrate vine-like plant with succulent triangular leaves which bear through the spring and summer very long white tubed fragrant flowers that are open in the afternoon and through the night. The corolla tubes of the flowers are

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often six to eight inches in length. This vine can be propagated by root division or by growing from seed. Native of sections 4A, 4, 4B, 3, 5, and probably through the rest of the state. Commercial.

*Acleisanthes obtusa* (Choisy) Standl. Similar to the species above. The flowers are white to pink, larger in diameter, and with a corolla tube of about two inches in length. This plant, however, grows as a climbing vine, often reaching the tops of small trees, where large clusters of white tubular flowers are conspicuous in the late afternoon. The plant is easily propagated by root division.

*Nyctaginia capitata* Choisy. Devil's Bouquet. A most showy plant native to sections 7A, 4A, 4, 4B, 3, 5, and 6. This plant, which is succulent and prostrate, produces pairs of triangular leaves that somewhat resemble those of the Rex Begonia. Throughout the summer it bears clusters, two or more inches in diameter, of brilliant red flowers; it can stand the hottest, driest weather, its most common habitat being hot, dry roadsides. It can be grown by root division or from the seed and requires two years from seed to bloom. It is very handsome, is not poisonous, and should be widely cultivated.

#### PORTULACACEAE

*Claytonia Simsii* Sweet White Texas Star. A plant commonly called White Texas Star. It is a vernal succulent arising from a heavy tuber. It is a native of sections 4B and 1 but will grow under cultivation in 3 and 4. It is most easily obtained by the purchase of tubers which like bulbs can be stored for some time. The plant should be part of every rock garden because of its early blooming habit. It, however, will continue to make new flowers after rains throughout the summer. Commercial.

*Portulaca* Moss Flower. There are five species of this genus in the state all of which are called Hog Pursley. In every section there are varieties which are worthy of cultivation. These should be sought out and used as bedding plants because of their hardiness and ability to tolerate high temperatures and lack of moisture.

*Talinum aurantiacum* Engelm. Yellow Flame Flower. Native of sections 4A, 4, 4B, and 3; will grow in sections 7, 7A, 1, and 5. This is a plant worthy of any garden and one not seen in collections. It grows from a thickened tap root to a height of over a foot, has linear leaves, and produces yellow flowers almost one inch in diameter, which open in the late afternoons in hot, dry weather, making this plant valuable for furnishing flowers in midsummer. It is very common along fence rows and in sparse thickets. The roots are easily transplanted. It also can be grown from the seed and requires two years from seed to flowers.

*Talinum calycinum* Engelm. Pink Flame Flower. Native of sections 7A, 4A, and 4, but can be grown in sections 4B, 3, and 5. It is similar to the above species but grows taller, has leaves one-half inch wide and three



inches long, and produces flowers pink in color which are one inch in diameter and borne in the axils of the leaves. This plant has similar habits to the above species and should be abundantly cultivated because of its flowers which occur when few other plants are blooming.

*Talinum paniculatum* (Jacq.) Gaertn. Pink Baby Breath. Native of sections 4, 4B, 2, 3, and 6, and is probably found all over the state. This almost unknown plant comes from a fleshy root stalk and bears numerous triangular leaves which are very succulent. The lower branches are the same but the upper branches are very small and wire-like, and bear a large number of small pink flowers. The flowers appear first in June and continue to open until late fall. This plant also has been grown as a house plant and the same individual has given good service through a period of three or four years. Seedling plants appear in numbers under the mother plant. As an oddity, a member of a rock garden or rock garden group, or a companion plant for some small bush, this plant is ideal. It will grow in the shade of almost any kind of a shrub and in the middle of summer the shrub apparently bears flowers which really belong to the hidden plant beneath.

*Talinum parviflorum* Nutt. Dwarf Flame Flower. This peculiar *Talinum* is little known. It grows to a height of from three to four inches, is a perennial, and bears a cluster of succulent round leaves about one-third of an inch long at the top of a red stem two to three inches long. From the center of this cluster of leaves, there arise at times throughout the summer wire-like flowering stems, one and one-half inches to two inches long, which bear from seven to ten minute pink flowers. This plant is common throughout sections 4A, 4, 4B, and parts of 3 and 5. It is to be looked for in sandy locations where moisture is abundant and among grasses, the pink flowers just topping the grass sods. It makes a very curious and excellent pot plant. A single specimen has been kept in the house for more than two years with complete success. The minute seed pods burst at maturity and the seedlings appear in a few days around the mother plant. This miniature *Talinum* should be in every collection of small or miniature plants, or if one wishes an odd and rare pot plant, it is a species to be desired. Commercial.

### BASELLACEAE

*Boussingaltea baselloides* H. B. K. Gulf Madeira Vine. So similar to the cultivated Madeira Vine that this is supposed by many people who are cultivating it to be the same species. It is common to the Gulf Coast brush association which reaches from Matagorda Bay to the mouth of the Rio Grande. It is also common in more or less shady thickets in section 5. The Texas Vine has shorter and more crowded spikes of flowers and blooms later in the year than the introduced species. The native vine should be cultivated more extensively.



### NYMPHAEACEAE (Waterlily)

Pond Lily Family. This family has ten representatives in the state of Texas. Wherever standing water or running water occurs, one or more of these forms should be used. All species can be obtained from dealers; however plants obtained by root divisions from the immediate neighborhood will give the best results.

*Nelumbo lutea* (Willd.) Pers. Lotus, Youquepin Water Chinquapin. This giant among water lilies is found growing in all sections of the state and will do well anywhere it is imported into unoccupied water. It prefers still water to running water. It is easily transplanted by root divisions or by obtaining the nut-like fruits and planting them along the edges of ponds.

*Nuphar advenum* (Ait.) Ait. f. Yellow Water Lily. Common to entire state. Prefers running streams; bloom seldom noticed because it is small and never completely opens. However because of its dark green leaves, it is very desirable where a collection of water plants is maintained. It is easily grown from root cuttings. Commercial.

*Nymphaea elegans* Hook. Pond Lily. Common white flowered pond lily. Flowers up to four inches in diameter, the white waxy petals tinged with blue or violet; blooms throughout the summer. Native in sections 4, 4B, 1, 2, and 3 and will probably grow in any section of the state.

### RANUNCULACEAE

*Anemone decapetala* Ard. Spring Anemone. A most common flower in early spring, flowers opening before the single leaf which accompanies the flower expands; flowers pink, white, or blue. The plants arise from tuberous roots. The early flowers are much smaller than later ones produced in the same group. The plant is multiplied by obtaining tubers, and should be in every small garden, rock garden, or collection of miniature plants.

*Aquilegia canadensis* L. Columbine. Found in sections 4A and 5 where it grows in wet, sandy localities in small canyons; beautiful and ideal for growing in the shade in rock gardens and in yards. Where a large rock garden is maintained in a public park, this plant should be one of the first to be tried. Commercial.

*Aquilegia longissima* A. Gray. Long Spurred Columbine. Native of the high canyons of Big Bend section, growing in the edges of springs; flowers golden yellow and the spurs of the petals reaching a length of three to four inches, making a most spectacular plant. This species is destined to become one of great popularity.

*Aquilegia phoenicantha* Cory. Cory's Columbine. A most unusual and distinct species bearing red flowers. Native of canyons of section 5. As it becomes available, this is destined to become a very popular plant in rock gardens and greenhouses.

*Clematis texensis* Buckl. Clematis-Pipe Vine. A vine growing to a height of fifteen to twenty feet, common in river valleys. Native to sections 4A, 4, 4B, and 5 and will grow elsewhere if cultivated. Recommended for planting to cover trellises or bushes in yards and for mass work in park and roadside plantings. This plant bears no tendrils. It has very peculiar dark green sepals, the tips of which are scarlet. Commercial.

*Clematis crispa* L. and *C. crispa* var. *Walteri* (Pursh) A. Gray. This beautiful clematis is found in sections 4B, 1, 2, and parts of 3. It is to be looked for along water courses and in wet meadows. The vine which runs over low bushes reaches a length of ten to twelve feet. It has hard green leaves and a thin red stem. The flowers which are one and one-half inches in diameter are a beautiful pale pink. This is one of the best of the native species for cultivation. As its stems take root wherever they touch the ground it is not hard to find rooted specimens. The var. *Walteri* grows as a single upright stem bearing from one to two pairs of leaves and from one to two flowers at the top. These flowers are from two to two and one-half inches in diameter. This plant would make a very excellent center for bedding purposes. Both the species and variety can be had from nurseries.

*Clematis Drummondii* T. and G. Old Man's Beard. This clematis is the most common vine in Texas. It is found in every section of the state and in some is so abundant as to become a weed. In cultivation where the old stalks are removed, it produces each summer a large number of creamy white flowers which are followed by the feathery fruits that give the name to the plant. Where a vine is needed, this plant will grow without any attention, and will make shade or serve as a windbreak.

*Clematis Pitcheri* T. and G. Red-flowered Clematis Pipe Vine. Very similar to *coccinea* but a more common plant. Stems of the vine are red, and the sepals of the flowers range from purple to red, being borne quite abundantly. Where moisture and shade can be had this vine will give excellent service as a bush, vine, or background. Commercial.

*Delphinium carolinianum* Walt. Blue Larkspur. Native to sections 4A, 4, 4B, 1, 2, 3, 5, and probably 7 and 7A. Very well known but should be utilized in park and roadside plantings and to a great extent in rock gardens and in gardens. Differing from the introduced larkspur, the native is a perennial and easily propagated from the tubers. Commercial.

*Delphinium virescens* Nutt. White Larkspur. Found all over the state. The tubers should be dug and transplanted in mid-summer in yards or wherever they are to be grown. To this end when the wild plants are in bloom, the place should be marked. The plants produce numerous tubers and there is no danger of eradicating a colony by taking tubers as there are always enough left in the soil to insure new plants.

*Ranunculus macranthus* Scheele. Large Buttercup. This golden flowered plant is common along all of the water courses of the state where it grows in soft soils in shade. The plant is obtained either by transplanting clusters of roots or by growing from seed. The seed should be planted in

September or October if a bloom is to be had the next year. The plant should be a part of every water planting in parks and should be grown as a specimen plant in yards, as it blooms through a period of a number of weeks in early spring. It is a beautiful addition to any garden.

### MAGNOLIACEAE

*Magnolia Ashei* Weatherby. Cucumber Tree. This tree bears the most magnificent leaves of any tree that grows in the state. Leaves six inches wide and two feet long are not uncommon. Its flowers likewise attain a diameter of from six to eight inches. This is one of the rare trees in the state. There are two known localities for it, both located in section 6. This tree has been transplanted and also grown from seed. Cultivated specimens are found in the cities of Beaumont and Houston. If one has a moist locality, he can doubtless grow this plant anywhere in sections 4B, 1, and 2. It should be cultivated so as to prevent its extinction.

*Magnolia grandiflora* L. This beautiful tree needs no description or introduction. It is native in sections 4B, 1, and 2. The magnolia will grow almost anywhere in the state. Commercial.

*Magnolia virginica* L. Sweet Bay. This small species of Magnolia is native to sections 1 and 2. It is a small tree growing to a height of twenty feet, producing beautiful large lanceolate leaves, and white flowers some four inches in diameter. It is very largely grown in the sections in which it is native but is popular elsewhere. Commercial.

### ANONACEAE

*Asimina parviflora* (Michx.) Dunal. Bush Pawpaw. This small unusual shrub is found in damp localities in sections 4 and 4B. It much resembles the large pawpaw but grows and produces fruits up to one inch long which are covered with wool. It is an oddity and because of its rareness should be grown where collections of plants are maintained. It requires shade and moisture.

*Asimina triloba* (L.) Dunal. Pawpaw. Small tree with large light green leaves bearing in early spring dark red flowers almost one inch across. These are followed in early fall by greenish fruits about two by six inches which are succulent, being filled with yellow sweet pulp and large brown seeds. This plant does not grow abundantly in Texas. It, however, should be increased by growing it in parks and yards in sections 4, 4B, 1, 2, and northeast portion of 3.

### MENISPERMACEAE

*Cocculus carolinus* (L.) DC. Coral Berry. This vine is found in every section of the state and should be grown wherever a woven wire fence is to be hidden or one desires a wall of dark green throughout the summer followed by one of coral red during the early winter. The plant is easily grown from root division or comes from sowing the seed. It is

a perennial aboveground but has very small wire-like stems, dark green in color. They attain a height of about ten feet. The coral berry is not poisonous as is commonly supposed. It should be included in every collection of vines and used in every yard or park. It is one of the most serviceable vines in Texas.

*Cocculus diversifolius* DC. Snail Seed. A vine similar to the one above but found only in section 3. It doubtless, however, will grow in section 5 and the southern parts of 4, 4B, and 2. The plant resembles the coral berry vine except that it has smaller and more varied shaped leaves. In place of clusters of red berries this plant bears a few large light green fruits which are somewhat succulent. The plant makes an excellent shade vine where a small background is needed.

### BERBERIDACEAE

*Berberis trifoliata* Moric. Agarita. This well known shrub is a native to all sections of the state with the exception of the pine woods and Gulf Prairie where it will grow under cultivation. It can be used as a hedge or specimen plant and is too well known to need further description. It should be very extensively used for hedges in parks and roadside work. Commercial.

*Berberis Swazeyi* Buckl. Blue Agarita. Native to sections 4A, 4 and 4B. It very much resembles Agarita and is being used considerably in the Dallas locality as it gives better results than *trifoliata* in the north central parts of Texas. The leaves of this plant bear five leaflets and the fruits are light blue instead of red, as is the case with *trifoliata*. Commercial.

*Persea Borbonia* (L.) Spreng. Sweet Bay. This well known shrub, from which the sweet bay leaves of commerce come, is a native in sections 4B, 1, and 2. The tree is small, and produces coriaceous, dark green leaves which are fragrant. The flowers are small yellow, being followed by peculiar pink to purple fruits about one-third of an inch in length. This tree will grow in the southern parts of sections 4, 4B, and 1 and in the northern parts of 2 and 3. It should take the place in its section of some of the introduced small-sized foliage trees.

*Persea humilis* Nash and *Persea pubescens* (Pursh) Sarg. These shrub-like forms of sweet bay are found in sections 5, 6, 4B, 1, 2 and 3, being abundant along the sea coast. They make excellent hedge plants and will be good substitutes for many of the green-leaved imported ornamentals.

*Podophyllum peltatum* L. May Apple. A native of sections 4B, 1, and 2 and will grow anywhere in the state in which shade, moisture and soft earth are available. It is a very showy and interesting plant. It grows from heavy underground root stalks. In early spring it puts up a stem which bears two umbrella-shaped leaves, each about six inches in diameter. In the axil of the leaves it bears one large poppy-like white flower which lasts from two to three days. This flower is followed in about



a month with a yellow plum-shaped fruit about one and one-half inches in diameter. The pulp contained in the fruit is edible but has a strong medicinal taste. Anyone who wishes an extremely showy and little known plant should secure the roots or seed of this one. The *Podophyllum* of medicine is the pulverized roots of this plant.

*Sassafras officinale* Nees and Eberman. *Sassafras*. Native to sections 4, 4B, 6, and 1 and probably will grow in sections 4A, 2, and parts of 5. This tree is very interesting, being one of the first carried from America back to Europe. It was supposed to be a new spice. The sassafras tea of literature is made from the roots of this plant. It is a shapely quick-growing tree with smooth brown bark and light green branches. The leaves vary in shape from ovate to trilobate. It bears large clusters of small yellow flowers which are followed by red fruits. Where collections of trees are maintained or as a single tree in a yard, sassafras should be chosen.

### PAPAVERACEAE

*Argemone alba* Lestib. White Poppy. Native through the eastern and southern parts of Texas. It is too well known to need any description. It is an annual and grows to goodly dimensions. If this plant were not so common, it would be extensively grown. However it has a place where one has an abundance of coarse land for which a floral cover is needed. The seed of this plant is easily obtained and should be sown in the fall of the year. It will do well if scattered broadcast without preparation of the soil or covering of the seed. Two other species, *Argemone mexicana* L. and *Argemone sanguinea* Greene are native to section 3. *Mexicana* is yellow and *sanguinea* ranges from pink to dark red. Throughout the habitat of *alba*, *sanguinea* and *mexicana* should be sown giving the tri-color effect to a white field.

### FUMARIACEAE

*Corydalis aurea* Willd. Scrambled Eggs. A low growing annual with fern-like leaves bearing numerous golden yellow flowers which resemble small slippers. It is one of the earliest plants to bloom in sections 7A, 4A, 4B, 3, and 5. It does best in sandy soils and where planted will take care of itself for years. This plant has long been in cultivation. Commercial.

*Corydalis curvisiliqua* Engelm. This plant so resembles the above that they are confused by most people. But it is a larger growing species and when the two are cultivated they are easily told apart. *Curvisiliqua* blooms earlier and for a longer period of time than the other. It should be grown by gardeners in sections 3 and 6 and in the southern parts of 4, 4B, and 2.

*Corydalis micrantha* (Engelm.) A. Gray. The smallest species of this group. Its fern-like leaves make it an addition to rock gardens and small vernal gardens. The perfect flowers of this species are extremely small and the plant has the habit of bearing cleistogamous flowers which appear as small colored leaf buds. This habit makes it an interesting plant to students of botany.



*Fumaria officinalis* L. Smoke Plant. An introduced plant but in many places it is used as a bedding plant and in hanging baskets. It has long feathery green leaves. Its slender branches bearing clusters of blue-gray colored flowers give it the common name of smoke plant. It is not common in Texas but is known only from the spinach fields where the plant occurs as a weed. It is here given as in flower catalogues, where it is listed as an ornamental plant.

### CRUCIFEREAE

*Lesquerella grandiflora* S. Wats. Field of the Cloth of Gold, Bladder Pod. There are seventeen species of this genus in Texas, all of them bearing numerous white or yellow flowers and blooming in early spring. Some few are perennial but the most showy are annuals. They are also honey plants. The seed of these species and a few foreign ones are on sale. All the native species are worthy of cultivation. The seed can be gathered as the seed capsules are borne on long stems and can easily be stripped. The seed should be planted in September and October to insure a spring bloom.

### CAPPARIDACEAE

*Cleome serrulata* Pursh. Rocky Mountain Honey Plant. A plant exploited very widely more than twenty years ago as a honey plant. It was sown over Texas but for some unknown reason did not fulfill its recommendations as a honey plant. It is a tall ragged weed, producing a bunch of pink flowers. At the present time it is restricted to sections 7 and 7A. Commercial.

*Cristatella erosa*. Nutt. A very peculiar annual common to all sandy sections of Texas. From early spring to midsummer it produces large numbers of yellow flowers. A bed of these plants will be sure to attract attention. The seed pods are borne on long slim stems making their collection easy. The seed should be sown in the fall of the year.

*Wislizenia refracta* Engelm. Spectacle Plant, Wild Stocks. Native of sections 7, 7A, 3, 5, and 6; stout perennial which blooms in early spring and continues through the summer. It bears a cluster of white stock-like flowers and so closely resembles the cultivated stock that at a distance it might be mistaken for a plant of that species. The white flowers are followed by two-seeded large flat seed pods which resemble a pair of nose glasses, whence the name given by the school child. As this plant is hardy throughout much of Texas, probably will grow anywhere, and has possibilities of strain development known by the pink and yellow coloring of certain flowers, it is a plant worthy of cultivation and experiment.

### SARRACENIACEAE

*Sarracenia Sledgei* MacFarlane. Pitcherplant. This very peculiar beautiful swamp plant is a native in sections 4B, 1, and 2 and will grow in water plantings anywhere in the state. Wherever lily pools, lakes, or moist conditions are available for planting purposes, a cluster of this rapidly disappearing plant should be grown.

### SAXIFRAGACEAE

*Philadelphus serpyllifolius* A. Gray. Syringa. Low-growing shrub of sections 5 and 6. In early spring this plant bears numerous small white flowers. It is very close kin to the cultivated syringa of the floriculturist but not the syringa of the botanist. This bush is excellent for use in sections 7A, 4A, and 4, where a low hedge which is composed of flowering bushes is needed. The plant is common in the Nueces canyon north of Uvalde.

### HAMAMELIDACEAE

*Hamamelis virginiana* L. Witch Hazel. This tall-growing shrub, which has the peculiar habit of blooming in the late fall and ripening its fruit in early spring, is a native to sections 1 and 2. It is grown in sections 4A, 4, 4B, and portions of 5 and will probably grow elsewhere in the state. It has a curious showy cluster of yellow bloom borne in late October, when most of the leaves are gone from other shrubs, making it a very spectacular plant. The witch hazel of commerce comes from a near species. Commercial.

*Liquidambar Stryaciflua* L. Sweet Gum. An ornamental tree native to sections 4, 4B, 1, and 2. Within the sections where it grows, it is one of the most abundant of the forest trees. Where planted as a roadside or yard tree it is excellent, and for avenue planting, it is probably the best tree found native to Texas. Its upright manner of growth, green lobed leaves, and branches with the heavy wings of bark make it a very sightly tree. It grows rapidly and will give better satisfaction than most of the native trees used for shade. Commercial.

### PLATANACEAE

*Platanus occidentalis* L. Sycamore. This well known large-growing tree is native to almost all sections of the state and its horticultural varieties are to be found in almost every city. The use of the sycamore is so well known that it is only necessary to suggest its wider use and the use of plants where dug in the wild or raised in the neighborhood of the place they are to be used. Commercial.

### ROSACEAE

*Amelanchier canadensis* (L.) Medic. Serviceberry. A shrub native only to section 1 but is grown in sections 4A, 4, and 4B. The plant grows as a bush but resembles a miniature apple tree. In early spring it bears clusters of showy white flowers having shades of pink. The flowers are followed in early summer by fruits which are miniature apples in color, smell and taste. This bush makes a very excellent hedge as it is showy in spring, summer, and fall, the leaves turning red in autumn. The berries make an excellent food for birds. Commercial.

*Cowania ericaefolia* Torr. and *Cowania Havarðii* S. Wats. Low-growing shrubs with small, crowded leaves bearing solitary flowers with yellow petals. The flowers are followed by long feathery tails sometimes two and one-half inches in length. They are native only in Trans-Pecos

Texas but under cultivation will probably give good service in sections 7, 7A, 4A, 3, and 5. They adapt themselves to low hedge work. The young plants are much more ornamental than the older ones, indicating that the old wood must be occasionally cut from the hedge. These plants bloom in early spring and the fruits are ornamental throughout the summer and fall. They are suggested for trial by anyone wishing an interesting prospect for a new hedge plant.

*Crataegus* Red Haws. Forty-nine species of red haws are known in the state of Texas. They can be classified as apple-like trees bearing white flowers followed by small red apple-like fruits. All of them have a long life and are easy to keep in shape. When in bloom they are very ornamental, some of them being more ornamental in fruit than in bloom. Haw trees should be very largely grown where a few trees are to be placed in the yard. One of them should be a haw and any one attempting to grow them should select from those which grow native in his locality.

*Fallugia paradoxa* (G. Don.) Endl. Apache Plume. This plant is native to sections 7, 7A, 5, and 6. It is a shrub which grows to a height of ten feet or more if protected. It has small divided leaves and bears white flowers very much resembling a wild rose, so much so that Wild Rose Pass, north of Fort Davis, was named because of the abundance of this shrub. These flowers are borne in abundance from April through the summer. Each flower is followed by a group of plumed-tailed fruits which give the common name of Apache Plume to the plant. It is grown quite frequently.

*Prunus caroliniana* (Mill.) Ait. Wild Peach. This is a beautiful shrub or tree, native to sections 1, 2, and a part of 4B. It will grow with care in sections 3, 4A, and parts of 7A, 3, 4A, 5. It has glossy evergreen foliage and bears early in the spring an abundance of small inconspicuous white flowers. These are followed by small blue fruits in July and August. The tree is a beautiful ornamental but cannot endure any great amount of heat and drought. It has been very abundantly planted throughout the eastern half of Texas. Commercial.

*Prunus mexicana* S. Wats. Wild Plum of eastern Texas which reaches the dimensions of a forest tree. The leaves are from two to three inches long and resemble those of the elm. The trees bear an abundance of white flowers in early spring before any leaves appear in the deciduous forest. This plum is and should be more widely used in roadside and park work.

*Prunus texana* A. Dietr. Sand Plum or Nerango. A native of sandy sections of 7A, 4A, 4, 4B, and 3. It does not resemble a plum. It has very small serrate leaves, bears no thorns, and is the first plant to bloom in the spring. It ripens its fruits in April and May. These fruits are very similar to apricots both in color and texture. They are a source of early preserves and make excellent jelly. In some sections the fruits are so common as to be offered for sale. This plum is easily obtained by planting the seeds or digging a seedling in the vicinity of

the old plants. They commence to bear at two years of age, and because of their early blooming habits, attractive fruits, and almost evergreen leaves, they make a very handsome hedge or specimen plant. As they will grow in almost waste lands, any sandy location should be planted with this plum. It is a sand binder and also produces marketable fruit.

*Prunus umbellata* Ell., var. *tarda* (Sarg.) Wight. A tree plum growing in sections 5 and 4. This is an additional tree-sized plum which blooms before the leaves appear on the tree and should be largely used in park or roadside work. It will grow anywhere east of San Antonio and probably anywhere in the state. A single specimen in full bloom in February when no other plants are attempting to bloom is a wonderful sight. It is easily grown from the fruits, which are extremely sour but ornamental, or from water sprouts.

*Pyrus arbutifolia* (L.) L.f. Red Choke-berry. A beautiful species of the rose family growing to a height of about ten feet with glossy green leaves and bearing in early spring clusters of small white to purple flowers. These are followed by small bright red fruits which are persistent, making this plant an excellent one for hedges, roadside plantings, or specimen plants. The shrub is native to section 1. Commercial.

*Pyrus ioensis* (Wood) Bailey, var. *texana* (Rehder) Bailey. Texas Crab-apple. This most beautiful and very little known tree is found in sections 4B, 1, 5, and probably 4A. It will grow anywhere in the state where it is protected. It is an apple growing in East Texas to the height of fifteen to twenty feet. In early spring it bears a wealth of pink apple flowers and ripens in September a crop of crabapples about three-fourths of an inch in diameter which are not edible. In the hills of the Edwards Escarpment, where it occurs, it seldom reaches a height of six to eight feet but the leaves are more numerous and flowers are almost red in color. This is one plant that horticulturists should take up and increase to such an extent that it could be made available for yard planting. It is a beautiful ornamental, recommended to nursery-men who are interested in making wild plants available to their patrons.

*Rosa*. There are seventeen species of this genus supposed to be native to Texas; however with the exception of *R. laeviagata* Michx., none of the species is common. Wherever a wild rose is native to the locality of the grower, it should be planted as it is very probable that the wild roses will be found to be more tolerant to root rot than those brought in from other sections or from without the state. *R. bractetata* Wendl., an escape, has become a pest on the Gulf Coast and in the Brazos bottom; however it has the advantage of being able to take hold and maintain itself in any kind of a wash, thus being an excellent plant to use in the repair of deep gulleys in heavily washed soil. A source of excellent rose stock and of the species that will maintain itself without much effort exists in the limestone hills around Fredericksburg, Kerrville, and nearby towns. Plantings were made here nearly seventy-five years ago and many of these roses still survive. Where they came from is unknown, but along the fences they seem to be hardy and can withstand considerable cold and much disease.



*Rubus trivialis* Michx. Dewberries. There are four recognized species and countless varieties of blackberries and dewberries in the state of Texas. In sections 4, 4B, and 1, there are many introduced species that have gone wild. There are many varieties of dewberry which as yet have not been cultivated which will amply repay the nurserymen. Early forms and ornamental varieties are common with the type in the low lands of the eastern part of the state.

*Vauquelinia angustifolia* Rydb. Small tree belonging to the rose family. It is only known from Trans-Pecos Texas. It is upright in its manner of growth and has the most peculiar leaves of any of the rose family. These are about one-third of an inch in width and three inches long. Most of them are sickle-shaped and bear a few teeth along the edge. The plant bears terminal clusters of small white flowers. In its native habitat the plant is evergreen. Other members of this genus are cultivated and it is very probable that this plant which itself is very attractive will become popular as attempts are made to cultivate it.

### LEGUMINOSAE

*Acacia amentacea* D.C. Black Brush. A tall growing shrub having dark green typical acacia leaves. It is armed with straight spines about one inch in length. In early spring the tree is completely covered with tassels about one inch long of light yellow flowers. These flowers are followed by thin purple pods which make the tree ornamental. Were it not for the great abundance of this species in the territory where it is native, it would be a widely cultivated plant. It will grow anywhere in central Texas. It prefers sandy soils but will grow in soils mostly composed of broken rock as is attested by its being more or less common in section 3. This plant should be used through the southern part of sections 4, 4B, and 5 in the control of erosion and should be used through those sections as specimen plants for roadside and park work.

*Acacia angustissima* (Mill.) Kuntze. Prairie Guajillo. This is a very beautiful species of acacia little known and is seldom used for ornament. This member of the family does not reach a height of more than three feet, growing in small clumps in the open prairies and bad lands of sections 7A, 4A, 4, 4B, 3, 5, and 6. In the southern part of the state the bush is perennial above the ground. In the northern part it acts as an annual above the ground. It bears numerous fern-like leaves and produces through the summer clusters of typical acacia flowers which are large for the genus and pure white. The plant is easily transplanted by root division and easily grown. The plant will well repay the care given it.

*Acacia Berlandieri* Benth. Guajillo. The most famous honey plant of Texas. Found locally in sections 4, 3, 5, and to some extent in 6. It will grow through the southern half of the state with proper care. It is a tall-growing shrub with few thorns and bearing fern-like leaves. It begins to bloom in November, bearing a few clusters of white flowers. These increase in number until by the middle of March the plant is



white, so numerous are the flower clusters. The period of the honey production from this plant is from the middle of March to the last of April. The honey is water-white and has received the greatest number of first prizes of any honey exhibited. If one wishes to transplant this shrub from the wild, he must hunt for seedlings as the roots of the old plant penetrate the soil so deeply that it is next to impossible to transplant them. The easiest way to procure young plants is by collecting the beans just as soon as they are ripe, which will be in June and July. The seed should be immediately put into the ground where the young plants are desired and the ground kept wet for at least a week, at which time the young plants will appear. These should receive a partial shade for the first year, after which time they will take care of themselves. As a specimen plant or hedge, guajillo is decidedly ornamental.

*Acacia Farnesiana* (L.) Willd. Huisache. This tree needs no comment. It is a native to sections 4, 4B, 2, 3, and 5. It is increasing in numbers materially and is emigrating northeastward. There should be increased plantings through the southern half of Texas. Commercial.

*Acacia Greggii* A. Gray. Long-flowered catsclaw. One of the best honey plants in the state. It is native to sections 7, 4, 4B, 3, 5, and 6. In the eastern part of its habitat it is a low-growing bush extremely thorny and producing a profusion of yellow tassels as flowers in April and May. In the western part of its home, it grows both as a shrub and a small tree. Because of its armament it is hardly wise to cultivate such a plant, yet if one wants a hedge which will be beautiful and stop anything, this plant will do the work. There are thousands of acres of almost worthless land which if planted to this shrub would become honey producing and at the same time this leguminous shrub would break up and improve the soil.

*Acacia Roemeriana* Scheele. Round-flowered Catsclaw. A native of sections 7A, 4A, 4, 3, 5, and 6. In most sections this is a small round-topped tree with typical acacia leaves. In early spring it is covered with yellowish green round acacia flowers which are followed by red seed pods. This acacia has but few thorns. It is quite largely planted. Commercial.

*Acacia tortuosa* (L.) Willd. Huisachillo. A plant which is confused with Huisache. The following differences help in the identification of the plants in the field. Huisachillo has smooth greenish brown bark and lemon yellow flowers, and blooms earlier than Huisache, which has red brown bark and golden yellow flowers. Huisachillo is generally a shrub-like plant or tree, whereas Huisache produces strong straight stems and becomes a good sized tree. The seed pods definitely separate the trees. The pod of Huisache is black and smooth on the outside. The seed pod of Huisachillo is about five inches long, much resembling the pod of a snap bean, and is covered with coarse wool which persists after the bean pod has fallen from the tree. Huisachillo is a honey plant while Huisache is only a pollen plant. For a specimen plant or background Huisachillo should be used.

*Acacia Wrightii* Benth. Tree Catsclaw. Native to sections 3, 5, 6, and parts of 7 and 7A; however it is growing under cultivation in 4A, 4, and 4B. In some sections this acacia grows as a shrub but generally it grows as a tree up to thirty feet in height and ten inches in diameter. The flowers occur in May and are produced abundantly. The clusters are about three inches long with the flowers pure white. It is a good honey plant and a most excellent ornamental tree. It has few thorns. It can be transplanted or can be grown from seed.

*Amorpha canescens* (Nutt.) Pursh. Lead Plant. A peculiar legume reaching its southern limits in sections 1 and 3, which probably will grow in the northern parts of 4, 4B, and 1. It is a short-stemmed perennial bearing very numerous small leaflets. During the summer it bears long spikes of small purple pink flowers. The leaves are lead colored; however it received the name of lead plant from the fact that it was used as an indicator of the occurrence of lead ore in the days when Galena, Illinois was the greatest lead producing town in the world.

*Amorpha fruticosa* L. var. *angustifolia* Pursh. Wild Indigo Bush. A shrub found growing in wet meadows or along the edges of water courses. Through the entire summer it bears long spikes of purple flowers which are increased in their coloration by the fact that the stamens are orange colored. This shrub will grow anywhere in Texas and should be largely used where moist locations or water is available. For roadside planting this cannot be excelled where the road crosses water courses.

*Amphicarpa bracteata* (L.) Fernald var. *Comosa* (L.) Fernald. Hog Peanut. In Texas a native of sandy parts of sections 4, 4B, 2, and 3. This is a perennial arising from a heavy root stalk. It produces vine-like stems which reach a length of four to five feet. It is dark green in color and the leaves are sufficiently coriaceous to stand up without shade during the heat of summer. Following rains this plant produces two kinds of flowers, one which is a typical purple legume and borne in clusters above the leaves, which in time give way to pods about three inches long; the other flowers are very small and white, the peduncle on which they are borne elongating drives the flowering point deep into the soil where a peanut-like pod is formed which contains two seeds. This plant is a curiosity. It can be grown in a hanging basket, and in the shade of the leaves below the basket will very often produce the peanut-like fruits in the darkness of the protecting leaves, while on the outside of the cluster the aerial flowers will produce pods. This plant likewise should be grown throughout the blow sand regions of Texas as it is an excellent sand binder.

*Astragalus Earlei* Greene. Narrow-leafed Loco. One of the common loco plants of section 6. It will also grow in sections 7A, 7, 3, and 5. As an ornamental this loco has many things to recommend it. It produces a heavy rosette of gray green leaves. Through the summer it sends up shoots of small purple *Astragalus* flowers. It is a perennial and as a specimen plant or a border plant it will give excellent service.

*Astragalus mexicanus* A. DC. Mexican Ground Plum. This plant is common on limestone soils throughout the central part of Texas and will grow almost anywhere that it is planted. Its seed pods are about the size of the common cultivated plum, green in color, and before the pods ripen, are succulent. It is used by the Mexican as an article of food and in Texas during the early days it was a life saver for many communities. It is a perennial, can be easily transplanted by root divisions, and is an excellent ornamental, as it is one of the first wild plants to bloom in the spring. Flowers are creamy white and borne in large spikes which lie flat on the ground.

*Astragalus mollissimus* Torr. Loco Weed. Not uncommon in sections 7, 7A, and parts of 5; however it can be grown anywhere in the state. It is the best known loco weed. It grows from a strong perennial root stalk and bears a large rosette of green leaves. Throughout the summer season it puts up large spikes of red purple flowers. For a specimen plant or for a border this plant will repay the trouble taken in securing and cultivating it. Contrary to common belief these plants are slow in spreading and are easily controlled.

All members of the genus *Astragalus* are worthy of cultivation. It is perennial, can be transplanted easily, and bears numerous white to purple flowers. If one wishes to start a wild garden, this genus offers great opportunity.

*Baptisia leucantha* T. and G. Wild Indigo. Native of sections 4A, 4, 4B, 1, and 2. The genus *Baptisia* is one much neglected by floriculturists. All of the species produced in early spring a caudex about one foot long which bears two or three long divided leaves and a cluster of yellow or white bean-like flowers. In this species, whose home is in sandy soils, its clusters of yellow flowers much resemble the clusters of *Wisteria*. Other species worthy of cultivation are *B. leucophaea* Nutt., *B. sphaerocarpa* Nutt., and *B. Nuttalliana* Small. These are commonly confused and all go by the same common name. While they do their best in sandy soils, they are very common in clay, gravel, and even on rocky hill sides. They come from a perennial root stalk which can be transplanted.

*Cassia Lindheimeriana* Scheele. Lindheimer's Cassia. Common to all of the state outside of the piney woods and Gulf Coast. This plant is annual above ground. It produces strong growing stalks up to five feet in height which bear many pinnately divided leaves that are covered with gray wool. In the latter part of summer it produces a great abundance of golden yellow Cassia flowers almost one inch in diameter. For a specimen plant, a hedge, or a background this plant is most useful.

*Cassia pumilio* A. Gray. Native to sections 7, 7A, 4A, 4, 4B, 3, 5, and 6. It is a peculiar plant and known to but few people. The plant above the ground consists of two lanceolate leaves, the caudex seldom appearing above the soil. A stem arises from between the leaves and produces yellow and black marked flowers about three-fourths of an inch in diameter. Because of the supposed resemblance this flower is called buttercup and yellow violet, but the flower is a definite cassia flower,

and has an underground heavy root stalk which goes down to a distance of six or eight inches where a series of heavy tubers exists. This ability of the plant to store moisture makes it one of the few plants that can bloom on scheduled time every year. This plant should find a place in every rock garden.

*Cassia Roemeriana* Scheele. Roemer's Cassia. Native of sections 7A, 4, 4B, 3, and 5. It has an underground root stalk, and in summer produces stems twelve to twenty inches in height, bearing green lanceolate leaves which occur in pairs. It produces throughout the summer large numbers of golden cassia flowers. As a low-growing border plant or as a center for a bed where yellow flowers are constantly needed, this is valuable.

*Cassia occidentalis* L. Coffee Senna. An annual, tall-growing member of the genus. It is found native in sections 4, 4B, 1, 2, and 3 and is generally considered a weed. However it is valuable in sandy sections and when sown in early winter will maintain itself and act as a sand binder throughout the winter and following summer. It can stand any amount of heat and drought. It is quite beautiful with its dark green leaves and large yellow flowers. Folk-lore has it that this plant was introduced many years ago as a substitute for coffee. To those who wish to plant to attract butterflies, this is ideal as it is the food plant for most of the large yellow species which will be attracted to it abundantly.

*Cassia Tora* L. Sickle Senna. A most common weed throughout sections 4B, 1, and 2. A single plant grown by itself is beautiful. It bears delicate leaves and large bright yellow flowers one inch in diameter which are followed by curious sickle-shaped pods. Through the sandy portions of its habitat, it is the most common weed. Its vigorous growth and liking for sandy soil indicate that this plant should be utilized as a green manure crop. It bears as many nodules as any cultivated legume. In sections where it grows abundantly it should be turned under about the first of July. A second crop will appear shortly and this should be turned under at the common bedding time around Christmas. This will give two green manure crops within one year. At the same time this will probably reduce the numbers of the most common weed.

*Centrosema virginianum*. Benth. Gulf Coast Pea. A very attractive climbing vine common on the Gulf Coast. It is a perennial from a heavy root stalk. It bears a purple flower somewhat resembling a sweet pea which is borne in some numbers at the ends of the branches. They are followed by pods from three to six inches long bearing many seeds. The plant can be raised from the seed or transplanted by root division. As it is a perennial it should be used in sections 4, 4B, 2, and 3, and the eastern parts of section 5.

*Cercidium macrum* Johnston. Palo Verde. Found in sections 3, 5, and 6 but will grow anywhere in Texas as far north as Austin. This small tree with its dark green bark, very small leaflets, and clusters of yellow flowers through the summer makes an attractive hedge or specimen plant. *C. Macrum* does not bear as many thorns as *C. texana*. The plant is easily grown from seed.



*Cercidium texana* A. Gray. Plant very much resembles the last but is more shrub-like. In places it covers a large amount of territory. It bears numerous thorns. The bark is greenish yellow and the flowers yellow. It is said to be a honey plant. Easily grown from seed.

*Cercis canadensis* L. Eastern Redbud. A shrub or small tree the bark of which is red. The leaves are heart-shaped, smooth, and dark green. The stems generally rise from a common root-stalk, bear few branches, and bend from the common center. In very early spring the stems of this plant bear numerous dark red, small pea-shaped flowers in large clusters. These flowers which appear as buds that never open give the name to the plant. The flowers are followed by clusters of red pods which are also ornamental. This species occurs in sections 4, 4B, 1, 2, and parts of 3 but it will grow anywhere it is planted. It makes a fine ornamental because of its color and the time at which it blooms. Commercial.

*Cercis occidentalis* Torr. Mountain Redbud. This is a plant similar to the last except that it grows as a small tree but with many branches from a common trunk. The leaves are very similar and the flowers, while borne in a similar manner, open and are very bright red. This tree can be transplanted from the wild or raised from the seed. Though it is a native of sections 4A and 5, it can be transplanted and raised anywhere. It should be quite largely used in parks and for roadside work wherever limestone or other rock ridges occur. Commercial.

*Clitoria mariana* L. Butterfly Pea. An annual vine arising from a heavy perennial root stalk. The stems are green and wire-like growing to a height of four or five feet. In the axils of the light green leaves is produced a large and most beautiful butterfly-shaped flower. The flower is pink and is produced from early spring until frost. This plant should be very frequently used as specimen plant in yards and parks. A single tuber will produce sufficient vine to cover at least ten feet of space. The plants may be procured by digging from the wild or can be grown from seed. Commercial.

*Coursetia axillaris* Coult. and Rose. Baby Bonnets. A leguminous shrub found only in section 3 but can be grown in the sandy parts of 4, 4B, and 2. A low-growing unarmed bush bearing small light green leaflets. Throughout spring and summer the stems of this plant are covered with numerous small, white and pink, pea-shaped flowers. From previous success in transplanting it, and its performance under cultivation, this will doubtless become a common cultivated shrub in the sandy lands of Texas.

*Dalea frutescens* A. Gray. A low-growing perennial shrub bearing thick clusters of very small divided leaves and covered during the most of the summer with very numerous red and white pea-shaped flowers. This bush is a native of sections 7A, 7, 4A, 4, 4B, 5, 6, and the northern part of section 3. The plant is attractive, and can be transplanted from the wild as well as grown from seed, or from cuttings. Cultivated, it is much larger than in the wild.



*Dalea nana* Torr. A plant much confused with the one above. Native to every section of the state and can be procured more easily than *D. frutescens*. The flowers are white and the seed pods which follow are probably more showy than the flowers. This genus has many other species all of which are worthy of cultivation. The ease with which this genus can be transplanted and the fact that it can be grown from cuttings should make it popular.

*Desmodium bracteosum* (Michx.) DC. A very showy plant belonging to the genus which includes all of the tick-trefoils. The plant is annual aboveground, from a heavy perennial root stalk. Aboveground it consists of a long peduncle red in color which bears two or three foliate leaves. From the axils of the leaves come the flower stalks which are from six inches to one foot in length. These bear from fifteen to twenty large purple bean flowers which are followed by quite large flat pods armed with hooked bristles, giving the name of Beggar Ticks to this plant. As an oddity or for a planting where natural landscaping is practiced, this plant is excellent. There are nineteen other species of this genus in the state ranging from very small growing forms with small flowers up to the one described. Any one of them is worthy of a place in landscape work.

*Erythrina herbacea* L. Coral Bean. A native of sections 4, 4B, 1, and 3 and will grow anywhere in the state. The plant must have soft soils in which to grow. It is an annual aboveground rising from a very heavy tuber. In early spring a single red peduncle, which will grow as high as four feet, arises from the tuber. This bears from twenty to fifty red flowers that are about one-fourth of an inch in diameter and on some plants at least two inches long. The shape of the flowers gives a colloquial name of Firecracker Plant to this species. The flowers are followed by brown bean pods which always extend at right angles to the main stem. The pods have constrictions between the beans. When ripe the pod opens, exposing the coral red beans, which remain fastened to the pod until the accidents of winter break down the dead plants. The plant itself comes up after the flower stalks. It consists of a herbaceous stem bearing a large divided leaf and occasionally a few thorns. The plant is bright green and makes an excellent ornament. The plant is most easily obtained by digging and transplanting the tubers; however the plants can be grown from the seed. It requires three years from the seed to the first bloom. Growing in a narrow strip along the Gulf Coast and on Padre Island is another species known as *E. arborea* (Chapm.) Small, Tree Coral Bean. It is doubtful if this species can be grown very far from salt water, though it is worth a trial. The tree grows from a heavy underground root stalk rather than from a tuber. The bark is light green, the trunk of the tree being two inches in diameter and twenty feet high and bearing spikes of red flowers in the axils of the leaves. This species blooms after rains throughout the summer.

*Eysenhardtia texana* Scheele. Rock Brush. A shrub or small tree native to sections 4A, 4, and 4B and will grow anywhere in the state. The plant is unarmed, and has gray bark and numerous small pinnately divided leaves. In the spring, again in the early fall, and sometimes

after rains this shrub puts out an abundance of small white flowers which are very aromatic. The bloom lasts for about ten days. This plant is very often confused with *Lippia ligustrina*, White Brush. Rock Brush is easily transplanted and just as easily grown from seed. It deserves a place as a hedge plant and in individual plantings. Commercial.

*Gleditsia aquatica* Marsh. Water Locust. Native to sections 4B, 1, and 2. It will grow along water courses in sections 7A, 4A, 3, and 5. A small tree with smooth gray bark and pinnately divided leaves, it bears in spring clusters of small yellow flowers which are followed by one-seeded bean pods. This plant has the ability to grow in lands that are too marshy for other trees. This tree should be planted through East Texas on roadside work, as it will grow along the edges of swamps and water courses where variety of species is needed.

*Gleditsia texana* Sarg. Texas Locust. A tall-growing honey locust native to sections 4, 4B, and 2, and occasionally found in other sections of the state. Differing from honey locust, it bears no thorns or sometimes a few. The foliage is similar but one will find pinnate and bipinnate divisions with the same leaves. This does not occur in honey locust. Its numerous yellow inconspicuous flowers are followed by long glossy brown pods. This tree should be planted through sections 7A, 4A, 4, 4B, 1, and 3.

*Gleditsia triacanthos* L. Honey Locust. This locust with the long brown bean pods and extremely large thorns needs no introduction. It has long been used as an ornamental and deserves a place where collections of trees or specimen plants are grown.

*Glycyrrhiza lepidota* Nutt. Licorice Root. Native of sections 4, 6, and 7 but will grow anywhere. The plant is herbaceous aboveground, grows to a height of three to four feet, is covered with numerous pinnate leaves, and bears clusters of white leguminous flowers. These are followed by clusters of very curiously twisted seed pods which are covered with spikes. It will grow in shady, damp locations where other plants cannot be raised. For this purpose it is very desirable especially where one has a large variety of places to landscape. The plant attracts attention throughout the year because it is little known and is quite different from any common plant.

*Hoffmanseggia densiflora* Benth. A very common plant through the whole of Texas yet it does not seem to have a common name. The plant appears above ground as three or four feathery pinnate leaves rising to a height of two to three inches. Throughout the summer this small plant produces spikes of numerous yellow red flowers which are followed by small bean pods. Underground the root system consists of numerous small black tubers which enable the plant to store up sufficient moisture to bloom through the dry summer without rain. This fact makes Hoffmanseggia a very valuable plant for roadside work especially in the plains

country. All that is needed to produce a bloom is to run the grader over the side of the road, removing the dead vegetation. These plants will immediately come into bloom. The plant is easily propagated by the sowing of seed. For a bed plant or border plant there is no better.

*Indigofera miniata* Ort. A gray green prostrate vine growing from a perennial root stalk. It bears salmon-colored flowers throughout the summer. It will grow anywhere in Texas but prefers sandy soils. For a ground cover to prevent blowing sands, or to produce forage there is no better plant. Wherever blow sands are encountered, this vine should be one of the plants used for erosion control.

*Indigofera suffruticosa* Mill. A strong growing herb found throughout Texas. In the southern part it is shrub-like and in the northern part acts as an annual above ground. It grows most abundantly in sandy soils where it will become the dominant plant if not opposed. It is a legume and produces large numbers of nodules. As it will grow in the poorest of sandy soil and by its massed roots will prevent blowing, this plant should recommend itself to anyone attempting to control blowing sands. It is somewhat ornamental as it bears through most of the summer small spikes of very peculiarly colored bean flowers.

*Krameria secundiflora* DC. Native of all of the state with the exception of sections 2 and 3. An herbaceous plant from a heavy underground stem, the branches grow to a length of two or three feet. The leaves are lanceolate and gray green in color. The plant bears numerous peculiarly constructed red flowers. As it grows flat on the ground with the branches radiating from their point of origin and is adorned with these flowers, it is a fine plant where sod or flower beds have not as yet been established. It is here included with the legumes for convenience. As the seed pods are angled, the vine is sometimes confused with the puncture plant.

*Lespedeza prairea* (Mack. and Bush) Britton. Prairie Clover. Native of sections 4, 4B, 1, and 5. A legume that has much promise as a long-time ornamental. The plant grows from a cluster of heavy root stalks. In early spring it sends up a number of straight-growing stems which bear trifoliate leaves. When the stems reach a height of from ten to fifteen inches, a cluster of bright pink-shaped flowers are produced in a head rather than a spike. These clusters continue to bloom for a period of several weeks, making this plant a very showy one. This is best in sandy lands but will grow anywhere in the state. As it is a perennial and can stand considerable drought, it is recommended for planting as a miniature hedge or border plant.

*Lespedeza Stuevei* Nutt. Tall Bush Clover. This species is similar to the above but produces only a few stems from each root cluster. These will grow to a height of six to seven feet and produce a head of purple flowers about one and one-half inches in diameter. These last for a period of two months. As a specimen plant anywhere, this will attract

attention. While its habitat is sandy soils, it will grow almost anywhere. It can be used to good effect where one wishes to form a temporary arch of plants. There are ten other species of *Lespedeza*, all of which are called Bush Clover, do their best in sandy soils, and are valuable as sand binders or forage.

*Leucaena pulverulenta* (Schlecht.) Benth. Tepehuaje. Native of the Gulf Coast of section 3 and the Rio Grande Valley. In the northern parts of its habitat it grows as a shrub. The bark is gray and covered with a powdery white substance. The leaves are finely divided, giving the tree the appearance of a huge fern. The flowers are borne in white heads about one inch in diameter. These are followed by thin seed pods which grow to the extreme length of ten to twelve inches. In the Lower Rio Grande Valley this plant becomes a tree of two feet or more in diameter and reaches a height of thirty to forty feet. It belongs to the tropical regions and whether it will grow outside of section 3 is doubtful. It, however, should be used very largely in plantings in the Lower Valley and seacoast towns.

*Leucaena retusa* Benth. A small leguminous tree without thorns which bears numerous yellow flowers in early spring. These flowers are gathered together in heads about one and one-half inches in diameter. These are followed by clusters of flat bean pods from eight to ten inches in length. This tree is found in section 5 and to some extent in sections 6 and 4A. The tree is little known as it is a member of the live oak motte association where the trees are hidden. Few people even in the country where it is common know of it; hence it has no common name. It is a favorite browse plant with cattle which accounts for the reason that the surviving members are protected by the oak mottes. Because of the beauty of the foliage, the peculiar flowers, and seed clusters, this tree should be made available to the public by some nursery. Besides its habitat it will grow in sections 7, 7A, 4, 4B, and 3.

*Lupinus Havardii* S. Wats. Chisos Mountain Bluebonnet. The largest growing member of the bluebonnet group in Texas. It grows to a height of about two feet, produces long spikes of light blue flowers tinged with purple. Though it is very common during the spring of the year in section 6 and is now growing in cultivation in sections 4, 3, and 5, it probably will do well elsewhere, or is worthy of a trial. The seed should be obtained shortly after they ripen as the pods are explosive.

*Lupinus perennis* L. forma *roseus* Britton. While this is a misnomer the name is retained as it is explanatory. The plant is very similar to the common bluebonnet but is pink in color. It is perennial and is found in a very few locations in section 6 but is grown in cultivation in sections 4, 4B, and 2. It is easily propagated from the seed. Attempts should be made to cultivate this plant in yards or parks wherever shade and moisture are available.

*Lupinus subcarnosus* Hook. The sandy land bluebonnets. Native of sections 4, 4B, 1, and 3. This bluebonnet, which seldom branches, is a native of sandy lands of East Texas. The flowers are light blue and develop red splotches after opening. According to the law, this is



the State Flower of Texas; however the next species is the one which was intended by the author of the bill. The sandy land bluebonnet can be raised on any soil and anywhere in Texas. It, however, is not as prolific as the next species.

*Lupinus texensis* Hook. The rock or purple bluebonnet. The State Flower of Texas. Too well known to need any description or any information as to its cultivation; however it is to be said that the seed should be put into the ground just as soon as possible after they ripen.

*Medicago arabica* (L.) Huds. Spotted Bur Clover. This well-known introduced plant, which is so well marked by the red spot in the center of each leaf, is sufficiently ornamental to grow in those sections where cultivation is necessary. On most of the sandy lands of Texas, if this plant is seeded in the fall, during the late winter, or early spring, it will make a large growth which is of great value to turn under as a fertilizer or for cattle and poultry feed. This plant should be grown in large quantities on sandy soils.

*Medicago hispida* Gaertn. Bur Clover. Common Bur Clover has become native to all of the sandy regions east of San Antonio and will grow anywhere in the state where some moisture is available. As a winter pasture plant, as a cover to protect soils from blowing or washing, and as a green manure crop, this plant is valuable. It should be planted in the early fall wherever loose sandy soils occur. It is also recommended because its growth period is from mid-winter until early spring, at which time it disappears. It can be planted in pastures where perennials give the feed during the summer months and will not in any way interfere with them. It can be planted in cultivated fields as it can be sown, will make its growth, and can be turned under, in time for any common crop.

*Medicago sativa* L. Alfalfa. This forage plant is well known in Texas. It, however, has many qualities which make it valuable as an ornamental. If it is not cut, it will continue to bloom for most of the summer. Its green foliage and the purple flowers are greatly admired even by those who are used to seeing it where it is grown in quantity. For specimen plants or as wind breaks for fragile annuals, alfalfa makes an ideal plant.

*Melilotus alba* Desv. White Sweet Clover. Annual, though its variety Hubam Clover is better known. Hubam has the ability to grow in the poorest of soils. About its only limiting factors are heat and drought. It is found growing in all of the state. It will fill the place of a cover crop. In Texas it should be sown in October. It will start blooming in March and will continue to bloom until the middle of July, at which time it should be removed from the land. It will drop sufficient seed for a crop for the next year. A stretch of sweet clover in full bloom is a mass of flowers which give off a perfume that will be long remembered. This is one of the best honey plants, and where roadside plantings of this ornamental super-seede weeds and other undesirable plants the soils and the bees will benefit by the planting.



*Melilotus indica* (L.) All. Indian Yellow Clover. A low-growing yellow flowered sweet clover. A plant said to have been introduced into the United States through the port of Galveston, it is upright, bearing numerous spikes of yellow bean flowers. It is a honey plant but because it grows luxuriantly and is through blooming in early spring, makes it a plant for soil improvement. It can be sown in the late fall and plowed under by the middle of the next March.

*Melilotus officinalis* (L.) Lam. Yellow Sweet Clover. This plant has been introduced sparingly into the state. It bears the largest flowers of any of the genus but is not so prolific as Indian clover. Where it will grow, it should be planted. It is a good honey plant and also can be recommended for forage and soils improvement.

*Mimosa biuncifera* Benth. Catsclaw. Native to all parts of Texas save the piney woods and Gulf Coast. It is a typical mimosa growing to a height of four feet, quite heavily armed, and covered with large numbers of leaves. The flowers are light yellow, and the pods which are borne in clusters are covered with thorns. For a plant to be used as a sand binder and for forage this species is one of the best, as nature has long used it for that purpose. The plant is also useful as an ornamental where a low hedge which will turn livestock is needed.

*Mimosa fragrans* A. Gray. A native throughout the northwestern part of the state but will grow in sections 4, 4B, and parts of 3. This is a low-growing mimosa which is partial to limestone soils and bears in early spring large numbers of clustered pink flowers which carry an abundant perfume. The plant is ideal for park or roadside plantings, and where an ornamental is needed which will protect itself against depredators.

*Mimosa Wootoni* Standl. Vine Mimosa. A vine having definite mimosa flowers, fruits, and leaves. Native to section 3 and will probably grow in sections 4, 4B, and 5 where it can be used to great advantage as a specimen vine. The stems which reach a diameter of approximately one-third of an inch attain a length of from twenty to thirty feet. The plant is covered with strong, curved green thorns and fern-like leaves, peculiar in shape and structure. In May and June the upper third of the vine bears large clusters of creamy white spikes of flowers which are followed by as large clusters of curved, flat bean pods. As an oddity or specimen plant this is one of the best. It can be transplanted from the wild with ease. It is available anywhere along the Gulf Coast through the central part of section 8.

*Neptunia lutea* (Leavenw.) Benth. Yellow Sensitive Briar. The genus *Neptunia* is a peculiar mixture. The vines resemble a prostrate *Cassia* while the flowers very much resemble *Mimosa*. It is a perennial and will grow in any sandy or moist soil. It is a fine cover for places which are submerged part of the year and are mud flats at other times. As a sand binder this plant is unique in that it forms a solid mat of green leaves and yellow flowers throughout the entire growing season. It is one of the best plants for this purpose occurring in central Texas. The plant can be grown from seed or by root division.

*Parkinsonia aculeata* L. Retama. This well known plant in many portions of the Gulf Coast is looked upon as a weed and in many others as a most desirable ornamental. Where it occurs in quantity it is a good honey plant. Its green stems and abundant yellow flowers, which are borne through the summer, make it desirable as an ornamental. It is a native of Texas south of San Antonio but will grow anywhere in the state. Its long peculiarly shaped leaves, its smooth green bark, and abundant flowers make it desirable. Commercial.

*Petalostemum microphyllum* (T. and G.) Heller. The small-leaved *Petalostemum*. Biennial or perennial; growing in sandy soils in sections 4, 4B, 2, and 3 but will grow anywhere in the state where soft soils and moisture occur. This plant bears numerous small green leaves, reaches a height of some three feet, and bears large clustered spikes of small white flowers which are very fragrant. As a sand binder and for soil improvement, there can be no better plant. Throughout the sand sections of the Gulf Coast and the Rio Grande Plains during certain years, this plant grows very profusely. As it produces nitrogen nodules and is easily grown, this plant should recommend itself to those desiring a plant for soil improvement. A few specimen plants make an addition to any garden or collection of plants.

*Petalostemum obovatum* T. and G. Pussyfoot. Annual or biennial. A most peculiar and spectacular plant. Its stem rises to a height of about one foot where it branches. The leaves are covered with gray wool and the flowering spikes are very large, about one inch in diameter and sometimes three to four inches long. At the time the plant is in bloom the tips of the yellow petals can be seen protruding between the almost white bracts which make up the spikes. This is a plant which can be raised in any part of Texas where there are soft soils and some moisture. It is a native of sandy portions of sections 4A, 4, 4B, and 3. The genus *Petalostemum* contains twenty-two species. As a genus they are spoken of as Prairie Clover. They range from annuals to thick-rooted perennials. All of them are adapted to cultivation. When they are of use as ornamentals where backgrounds and roadside work are desired, they are of considerable value because they can take care of themselves. The species growing native to the places where they are to be used should be the ones selected.

*Pithecolobium brevifolium* Benth. Gulf Coast Guajillo. A tall-growing evergreen shrub in extreme southern Texas and growing as far north along the Gulf Shore as Corpus Christi. In very early spring it is covered with clusters of flowers which are followed by straight bean pods. The plant is armed with numerous spines about one-half inch in length. In many places along the Gulf Coast it has been used as an ornamental. It is doubtful if it will grow outside sections 2 and 3, but the plant is of sufficient merit to warrant its trial by experimenters. This plant must not be confused with the prairie Guajillo.

*Pithecolobium flexicaule* (Benth.) Coulter. Ebony. A leguminous tree extending along the Gulf Coast from the tropics as far north as Corpus Christi. The tree has very dark green foliage and numerous cream-colored flowers in early spring, which are followed by sickle-shaped thick pods. The

pods are never dropped from the tree, giving an old tree a very peculiar appearance. The plant is of slow growth, protected by many thorns in its youth though in old age thorns are no longer developed. Along the Rio Grande the tree reaches a diameter of two feet and a height of thirty feet. In the Corpus country it reaches a diameter of two or three inches and a height of ten to twelve feet. This tree should be planted through the Gulf Coast country and on the contiguous parts of other areas. It is known that it will grow as far north as San Marcos. The tree is a beautiful ornamental and of slow growth. The wood is black and very similar to the ebony of commerce.

*Poinciana Gilliesii* Hook. Bird of Paradise Flower. The common Poinciana in cultivation in the southern part of the state of Texas, native to section 6. The bush will grow anywhere within the state. Under proper care it assumes the dimension of a small tree. To keep the plant in bloom through the summer and to make a fine shrub, the old wood should be removed. This will insure large and numerous clusters of flowers. As the bloom is terminal, the more new wood the greater the opportunity for flowers.

*Prosopis chilensis* (Molina) Stuntz. Common Mesquite of Texas. This name must supersede *glandulosa* and *juliflora* because of priority. This tree and its uses need no introduction. Where the tree is dominant and is to be used in landscaping, the old tree should be allowed to stand, but needs to be trimmed up and the unsightly ones gradually removed as the younger and more nearly straight trees reach sufficient size to supply the shade needed. The mesquite should be the state tree of Texas as it is now dominant except in a few areas.

*Prosopis cinerascens* A. Gray. Screw Bean. This is a miniature tree found in great abundance near to the waters of the Lower Rio Grande and Laguna Madre. The tree grows in the *Spartina* flats and is overtopped by the grasses. It grows to a height of eight to ten inches. It is tree-like in shape, and bears small clusters of lavender colored mimosa-like flowers which are followed by several tightly coiled beans resembling wood screws. This plant has long been confused with the last species and many people have hunted for a tree resembling a mesquite on the Gulf Coast from which the screw beans found along the roadsides and in water courses came. Few even of those reared in the sections where the plant grows are acquainted with it. This dwarf tree will grow anywhere along the Gulf Coast. It can be transplanted or can be grown from seed. For a rock garden or pot plant this is unique. Even when growing as a pot plant it will bloom and produce its curious seed pods.

*Prosopis pubescens* Benth. Tornillo. A tree similar to mesquite which grows only in section 6. It will, however, grow anywhere that mesquite grows if planted. With some protection this tree should do well as far north as Dallas. For parks and arboretums this tree should be included.

*Psoralea esculenta* Pursh. Indian Plant Root. There are nineteen species of this genus in the state of Texas. The plant resembles the lupines. It is perennial and arises from tubers. The leaves of the plant resemble more the print of a dog's foot than the leaves of the lupine which was named because of the resemblance of that foot to the leaves of the plant. The flowers are pale blue to white and quite similar to the bluebonnet. The tubers without regard to species formed a large part of the food of the North American Indian and the genus was very probably distributed by the loss of the tubers around Indian camps. The species is the "Pomme de Terre" of literature. The root of a mature plant will often weigh a pound and when baked very much resembles in consistency and taste an Irish potato. As an ornamental this species is fine for early garden work, as its large woolly leaves and clusters of blue flowers are very conspicuous. It can be raised either from the seed or by the transplanting of tubers.

*Rhynchosia texana* T. and G. The One-Leafed Bean. A peculiar member of the legume family. A vine from a perennial root stalk, the stems being from two to three feet long and bearing numerous kidney-shaped dark green leaves which show a heavy venation both on the upper and lower sides. The plant gives rise to two kinds of flowers. In early spring it bears a few flowers which are without stems and are borne in the axils of the leaves. These flowers are followed by pea pods, each containing two seeds. In the middle of summer, from the opposite axil of the leaves a stem about two inches long which arises above the leaves bears a cluster of three to six bright yellow bean flowers that as a rule do not produce pods but sometimes produce a pod containing six or seven seeds. As the plant is peculiar, is extremely resistant to hot dry weather, and is a sand binder and soil cover, this plant should be used in parks, roadside plantings, and in yards wherever soft soils occur.

*Robinia luxurians* (Dieck.) Rydb. A shrub found on the mountains of West Texas which bears in spring large clusters of white and pink flowers. The leaves are from six to eight inches long and are made up of numerous leaflets. This shrub should be used as an ornamental on sections 7, 5, and 6. It will probably thrive throughout the state. As its near kinsman which is common to the mountains of the southeastern states can be grown in any kind of soil, this shrub is recommended for trial.

*Robinia Pseudo-Acacia* L. Black Locust. This well known tree undoubtedly was introduced into the state as an ornamental and for fence post material. It has established itself abundantly in sections 4A, 4, 4B, and 5, and has lived for many years under cultivation in sections 7, 7A, 4A, 5, and 6. It undoubtedly will grow anywhere in the state that it is planted. It is a beautiful tree, will stand considerable hot dry weather, and in from fifteen to twenty years will produce durable fence posts. This was one of the trees that was highly recommended between 1884 and 1893 when tree claims were being settled through the Panhandle region of Texas. Numerous groves of this tree still exist. However they have



not come up to what was expected of them. The plant bears numerous clusters of white flowers each spring. This tree is recommended for planting especially in sections 7, 7A, 4A, 5, and 6. In section 4 the tree has in places become acclimated and grows as a forest tree.

*Sophora affinis* T. and G. Bear Berry. Small sized tree with gray bark on the trunk and light green bark on the branches. The leaves are long and pinnately divided. In spring it gives rise to numerous clusters of sweet pea flowers which are white and pink. During the fall of the year the tree is covered with great clusters of black bean pods which are peculiar in that there is a very narrow constriction between each of the seeds which gives a common name of "necklace tree" to this species. The plant is native to all of Texas and makes a good specimen plant for yard work, and has a place in park and roadside plantings to relieve the monotony of other species. Commercial.

*Sophora secundiflora* (Ort.) Lag. Mescal Bean. The most common name of this plant is Mountain Laurel, a name which should not be used, as Mountain Laurel has long been used as a name for a very different plant. Mescal bean is preferable as it is a partial translation of the Indian name. This small tree with dark green foliage and clusters of beautiful purple flowers in early spring will grow anywhere in the state and is too well known to need description. It can be raised from seed or transplanted. However, its propagation is accompanied by a large number of difficulties. To have success in growing this plant, seed pods of the year should be obtained in September. The seed should be taken from the pods and planted immediately, where the trees are to be located, then watered abundantly for three or four days. The young plants will come up in about a week. They should then be protected with a partial shade, and for the next two years the plant will probably grow not over four to six inches. The third year it will make abundant growth aboveground and if cultivated and given water, will grow to a sizable tree.

*Sophora sericea* Nutt. Silky Sophora. A beautiful plant native to sections 7A, 5, and 6 and will grow in 4A, 4, 4B, and 3. The plant is very numerous in its habitat but for some unknown reason has received no common name. It is an annual from a perennial root stalk, growing to a height of eight to ten inches, and resembling a small leguminous shrub but having no thorns. Throughout the summer it bears numerous white legume flowers which make a colony of these plants very conspicuous. These flowers are followed by small peculiarly shaped pods. For roadside planting, for borders in parks, or for a specimen plant, there is no better plant for a permanent fixture. It is easily obtained by root division. This plant is highly recommended.

*Tephrosia leucosericea* (Rydb.) Cory. The Pastel Pea of the sandy lands in the northern parts of sections 7A, 4A, 4, 4B, and 1. This is the most beautiful of the genus, all of which are worthy of cultivation. *T. leucosericea* grows as a group of short stems about one foot in height. These bear numerous leaves which are covered with dense white wool, giving the

entire plant a very pleasing appearance. In late spring a terminal spike of bean-shaped flowers of a splendid yellow and red pastel color make this plant one long to be remembered. It is easily transplanted because it has a heavy perennial root. This plant should be made available to the public by some nursery.

*Tephrosia Lindheimeri* A. Gray. Shoe String. A plant having a perennial underground root stalk and annual above ground. It produces vine-like stems six or eight feet in length bearing large pinnately divided leaves which are silver gray. Throughout the summer it produces quite large deep red pea-shaped flowers. This plant can easily be transplanted by root division or grown from seed. It is highly recommended where one desires a ground cover that will take care of itself. For roadside work, especially for country cemeteries or other places where only a minimum of attention can be given, there is no better ornamental. For yard work this plant will cover a trellis.

*Tephrosia virginiana* (L.) Pers. Pastel Pea. A plant with a perennial underground root stalk and annual stems growing to a height of from one to two feet. In April and May and again after rains, it produces large numbers of pastel red and yellow pea-shaped flowers. This plant is found in Texas where soft sands occur and will grow anywhere that it is planted. It should be adopted for specimen plants, backgrounds and small hedges, in yards and parks. It has much to recommend it. It is a soil binder of the first class and is found throughout the sand dune section of Texas, where in addition to its sand binding value it becomes one of the chief forage plants. Nurseries should make this species available to the public. This genus has five other species native to Texas that are worthy of cultivation. For those wishing to try natives for ornamentals, these perennial legumes are worthy of trial.

*Trifolium species.* Besides the ones mentioned *T. amphianthum* T. and G., *T. bejariense* Moric, *T. carolinianum* Michx., *T. dubium* Sibth., *T. procumbens* L., *T. reflexum* L., occur in sections 4A, 4, 4B, and 1. These clovers are all valuable as soil builders and binders. A few of them such as *T. carolinianum* and *T. reflexum* are beautiful enough to be used as bedding plants. They bloom early in the spring and thus can be superseded by other and more showy plants.

*Trifolium repens* L. Dutch White Clover. This is the trefoil or shamrock of literature. It is a plant introduced from northern countries, and while it thrives in the northern part of the state, it does not flourish south of Dallas, though in many places it persists for long periods of time. In South Texas the plant blooms in midwinter, while on the High Plains it blooms in June and July. This plant is a favorite in Europe and northern America as a cover plant for parks, and doubtless will persist even in Texas. There are six native species in Texas but none of them is sufficiently showy or of abundant growth to warrant its use as ornamentals or for forage crops. The red clover, *Trifolium pratense* L., has been introduced many times in the state but it will not maintain itself except in sections 1 and 2 and there for only a short time. After the removal of the cavalry camp from the government reservation at Leon

Springs, Texas the entire mule corral became a beautiful field of red clover. It was hoped that the plant would acclimate itself here because of the lime soil and the protection of the hills, but at the end of three years the plant ceased to appear.

*Wisteria macrostachya* Nutt. A vine wisteria which is in cultivation. It must not be confused with the introduced species which produce blooms before its leaves. The native species is a tall-growing plant, and blooms in the middle of summer, producing small clusters of violet flowers which are followed by numerous seed pods. This plant has been so widely dispersed that it is hard to say just what part of Texas is its native home. Where one wishes a tall growing perennial vine that needs no care, this is the one to use.

*Zornia bracteata* (Walt.) Gmel. Rabbit Ears. This is an odd member of the legume family. It grows very abundantly in sandy soils. The small yellow flowers are produced between two large bracts which suggested to school children the name of the plant. It grows from a perennial root stalk and can be used to good effect as a row or border plant in yards. It can be found in any sandy soils and is best grown from root divisions.

## LINACEAE

*Linum Berlandieri* Hook. Large Yellow Flax. Plant native to most of Texas. It arises from a perennial root stalk to a height of five to six inches and in early spring bears numerous flowers sometimes one inch in diameter. These flowers, however, fall off very easily and quickly which detracts from the species. Nevertheless the plant is worth growing because of its beautiful appearance early in the morning. It should be cultivated throughout its territory and especially planted along roadsides and in parks. It will take care of itself.

*Linum Lewsii* Pursh. Perennial Blue Flax. This flax, which is native in sections 7A, 4A, and 5, will grow anywhere in the state and is highly recommended for border plants and roadside work. The part above-ground resembles a stubby bush about eight inches in height, which bears throughout the summer large numbers of blue flowers resembling the cultivated flax. These flowers are followed by flax bolls which contain seed that are almost as large as those of the cultivated species. This plant has in it the making of a perennial flax which will produce seed in quantity. For roadside work the plant will re-seed itself and will stand almost any kind of rough handling.

*Linum sanctum* Small. and *Linum sulcatum* Riddell. Other large flowered species of flax. Generally annual like the the first species. They are adapted to roadside and park work, but unlike *L. Berlandieri* they hold their flowers throughout the day, making them more desirable for yard work.

**OXALIDACEAE**

*Oxalis dichondraefolia* A. Gray. A perennial oxalis native to sections 3, 5, and 6, which will grow anywhere in the southern parts of 4A, 4, 4B, and 1. It grows as a very low shrub not to exceed six inches in height but with woody stems. It bears gray green woolly leaves and produces numerous bright yellow large oxalis flowers. As a perennial border plant or bed plant in localities where only occasional care can be given, this is recommended.

*Oxalis Drummondii* A. Gray. Oxalis. This is the pink flowered oxalis which is found in every portion of Texas where soft soils occur. It blooms in early spring and again in the late fall. The early blooms are accompanied by a leaf divided into obovate three-lobed divisions. In the fall the leaves are much larger and each one of the ovate divisions is subdivided into two parts, thus giving a six-leaflet effect to the leaves. The plant arises from a peculiar bulb made up of inflated leaf-like scales. To grow this plant these bulbs should be dug and the larger ones planted where flowers are needed. The plant will maintain itself after being started. It should be said that this species will grow as a house plant and it is interesting to know that the Curved Bill Thrasher of the southern part of Texas lives altogether on the bulbs of this plant during the winter. In digging the plants from the hard ground this thrasher undoubtedly is the means of scattering and bringing into existence hundreds of additional oxalis plants.

**GERANIACEAE**

*Erodium cicutarium* (L.) L'Her. Small-flowered Stork's Bill. A small winter annual growing to a height of sometimes six inches. The leaves are dark green and divided into narrow lobes. The stalks are red. Numerous small red flowers are produced which are followed by the typical stork's bills of botany. The plant is a native of the western parts of the state but will grow anywhere. This plant has been very largely aided in its population by cattle men scattering the seed to increase pasturage. As an early cover crop for beds which are to be utilized later in the season, this low-growing plant is of great use.

*Erodium texanum* A. Gray. Large flowered Stork's Bill. This plant which is native to all of Texas except the piney woods and Gulf Coast much resembles the geranium of cultivation. It has geranium shaped leaves and red stalks, and produces a beautiful red flower much like the flower of the cultivated geranium, but it differs in that the flowers are not borne in a cluster and are followed by a long stork's bill seed pod unlike that of the cultivated plant. As an early cover and an addition to forage, this plant should be raised throughout its entire district. It should be especially planted along the roadside where in the earliest spring it will give color to the otherwise bare land as the leaves as well as the flowers are highly colored.



## ZYGOPHYLLACEAE

*Larrea tridentata* (DC.) Coville. Creosote Bush. A very peculiar shrub found in sections 7, 3, 5, and 6 and will grow in 7A, 4A, 4, and 4B. This is one of the most common shrubs of the desert part of Texas. Its small hoof-shaped leaves and yellow blossoms make the plant attractive. The fact that the leaves are covered with a viscid secretion which has a creosote smell makes this plant an oddity that attracts a great deal of attention where the plant is grown as a part of a desert garden or where under suitable conditions it is used as a specimen or hedge plant in park work.

*Portleria angustifolia* (Engelm.) A. Gray. Guayacan. An evergreen rigid shrub native to sections 7A, 4A, 4, 3, 5, and 6. It grows in large clumps and the plants reach a height of more than three to four feet; however, in the Lower Rio Grande Valley certain trees are known which are eight inches in diameter and thirty feet high. In early spring these bushes bear numerous white to red five-petaled flowers over one inch across. The plant is very attractive to bees and butterflies. It is the source of much of the early spring honey crop. It can be transplanted by root division or grown from the seed. As a specimen plant in yard or park work, it is quite attractive and outside of its own range it makes an admirable roadside plant because of its hardness.

## KOEBERLINIACEAE

*Koeberlinia spinosa* Zucc. Allthorn. Native to sections 3, 5, and 6 and to some extent in 7, 7A, and 4. A most peculiar plant consisting largely of green barked stems which because the tips are sharpened resemble a cluster of huge thorns. In early spring these green stems bear a few minute leaves towards the points of the branches and lower down small white flowers. The leaves soon fall off. The flowers are followed by small black berries which disappear within a month, leaving the plant during much of the year as a shrub or tree composed entirely of green thorns. It grows very slowly, and outside of its habitat is unknown. This species will grow anywhere in Texas, and where a collection of plants or a rock garden is maintained this should be one of the plants used. It can be transplanted. Allthorn must not be confused with *Adolphia infesta* (H.B.K.) Meisn., another bush which is generally without leaves or flowers and consists entirely of green thorns. *Adolphia* is more slender than allthorn and the branches extend at right angles from the plant and also to each other, a habit which does not occur in allthorn.

## MALPIGHIACEAE

*Malpighia glabra* L. Wild Crape Myrtle. A small shrub with brown bark, withe-like branches, and smooth green leaves growing to a height of four to five feet; very common on the Gulf Coast strip from Corpus Christi to the Lower Rio Grande Valley. The flowers which are red and yellow are of the same shape as the cultivated crape myrtle. They

are followed by small red berries. This plant is easily transplanted, is found in every thicket on the Gulf Coast, responds to cultivation by making rapid growth and producing many flowers, and is an excellent plant for yard work in section 8. This plant will grow with proper care anywhere south of Austin. It has been repeatedly transplanted with good results throughout its Gulf Coast range.

*Thryallis angustifolia* (Benth.) Kuntze. A peculiar and low-growing shrub found in sections 3, 5, and 4A; it is a perennial and reaches a height of about one foot. It has dark green almost coriaceous leaves one inch long. At various times during the summer and fall it bears spikes with a few red flowers of the same shape as those borne by the crape myrtle. These flowers, which are about one-half inch in diameter, turn yellow with age and do not drop from the stem until the seed are ripened. This plant should be grown in rock gardens or desert gardens wherever these are maintained, as it is easy to grow. Like any desert plant it blooms after every rain of any amount, no matter what time of year.

### RUTACEAE

*Citrus trifoliata* L. Bitter Orange. The wild or bitter orange has become a native in Texas, at many places in sections 4B, 1, and probably 3. In the vicinity of Tyler it forms large thickets in the ravines leading from the old nurseries where this plant was formerly used as a root stock for the cultivated citrus. The plant itself has a horticultural value in that it will withstand greater amounts of cold than any member of the citrus group and will produce orange blossoms far north of their natural habitat. If properly pruned to do away with the dead wood, the trees present a fine appearance throughout the year. The plant can be trimmed into a hedge to good effect; however as a specimen tree with the fruits left intact through the winter, it will receive the greatest amount of comment.

*Helietta parvifolia* (A. Gray) Benth. Small-growing tree seldom reaching a height of more than five or six feet but always maintaining a tree-like form. The branches are red brown but the new wood is bright yellow. The leaves are small and trifoliate. In spring it bears clusters of small white flowers followed by red brown berries. The plant differs from other members of the family in that it is unarmed. It is easily transplanted and makes a beautiful specimen plant or hedge. It is native to the Gulf Coast strip of section 3 but will grow anywhere south and east of San Antonio and probably elsewhere. It is worthy of a trial.

*Ptelea Baldwinii* T. and G. The narrow-leaved Wafer Ash. This member of the well-known wafer ash group is found only in isolated localities along the Rio Grande where it grows on gravel-topped hills. Differing from most plants of the genus the stems are straight, smooth, and upright. They reach a height of from eight to ten feet and bear thick clusters of narrow leaves which also point upward. The leaves are trifoliate and the leaflets about three-eighths of an inch by one and one-half inches. The flowers are the typical green clusters of the wafer ash

and are borne near the tips of the limbs. The flowers are followed by typical wafers that give the name to the tree. The wood of this differs from others in that it is white and tough. The plant does not have as much of the characteristic odor of the wafer ash as the other species. Because of the hardness of this plant and places it can fill in in yard or park plantings, this species should be made available to the public.

*Ptelea monticola* Greene. and *Ptelea trifoliata* L. Wafer Ash. These two species resemble each other very much and grow in the same district, one preferring hills and mountains while the other grows in river bottoms and prairies. They are so confused in the mind of the public that they must be grouped together. The plants are well known by the peculiar shaped pods which resemble the wafers once used in sealing letters and public documents. A later and more up-to-date name is Potato Chip tree, as the child of today never heard of a wafer but is well acquainted with potato chips. Besides being a quick-growing shrub, the plant will grow under all kinds of weather and soil conditions and is ornamental throughout the year. Commercial.

*Xanthoxylum Clava-Herculis* L. Hercules Club. A medium forest tree of sections 4B and 1 and to some extent in 4 and 3. Will grow anywhere in the state. The trees in early youth have an armament of stout thorns along their base. As the trees increase in size these thorns have developed under them a thick layer of cork which causes the thorn to extend as the apex of a pyramid of cork. Some of these projections are three inches long and four inches in diameter. By the time the tree reaches a diameter of more than four inches these lumps disappear with the exception of a section at the base of the tree. The upper bark of the trunk and limbs is almost white. The leaves are pinnately divided and bear few thorns on the midribs. The plant bears a cluster of yellow-green flowers followed by small capsules which burst, exhibiting glossy black seeds. The leaves possess a sharp aromatic odor and flavor giving the common name of tickle tongue. This tree should be grown as a specimen plant in every collection of forest trees. For roadside planting through the eastern part of the state it has its place. Commercial.

*Xanthoxylum Fagara* (L.) Sarg. Colima. This is the most beautiful of the *Xanthoxylum* group. It grows as a heavily branched shrub with numerous zigzag branches, the nodes of which are not over two inches in length. The leaves are pinnate but are divided and are less than two inches in length. The old plant bears numerous thorns which curve backward giving the name of "Una de Gato" to this shrub. It is easy to push one's arm into one of these bushes and next to impossible to pull it out. About the middle of the winter this plant puts forth hundreds of small yellow flowers which have an orange odor. By March it has ripened a large group of small yellow-red capsules which have a strong odor of citrus. This shrub is valuable as it can be trimmed to shape and in growing will maintain this shape. It is well adapted as a plant in a formal garden where all of the trees and shrubs are trimmed to shape. Native to sections 3, 5, and 6, and parts of 4, 4B, and 2.

*Xanthoxylum macrophyllum* Nutt. Prickly Ash. This is a tall-growing shrub somewhat resembling *Clava-Herculis*; however it does not produce the excrescences at the base of the trunk and does not have smooth light-colored bark on its limbs, nor do the limbs extend from the trunk at right angles. The branches are short and zigzag, and bear small pinnately divided leaves that have many thorns along the mid-ribs. This shrub like its large kinsman should be used in every part of Texas where an odd and different species of small tree is desired. It already is used in many parks and roadside plantings.

### SIMARUBACEAE

*Ailanthus glandulosa* Desf. Tree of Heaven. This tree, which is a native of the Orient, has gone wild all over Texas. It is here mentioned with the caution that it should not be grown unless there is some special reason for desiring the plant. It has the habit of putting out water sprouts which are next to impossible to exterminate. It has very little to commend it with the exception that it will grow almost anywhere. It is of rapid growth and goes to pieces just as rapidly. There are many other trees that will answer the same purpose and give much better service.

*Castela texana* (T. and G.) Rose. Amargosa. This is one of the most spinose of the shrubs of the brush country. It is native in sections 4, 3, 5, and 6. It grows in thickets of an almost pure stand. The bark is light gray, the branches very stiff and ending with a sharp thorn. The leaves are about one-third of an inch long, very narrow, dark green above, and almost white below. The flowers are very small, being about one-fourth of an inch across, and red in color. They have four petals. These flowers are followed by fruits which are about one-half inch long, one-fourth of an inch in diameter, and glossy red. One of these stiff bushes either in full flower or full fruit is a very pleasing thing. Every portion of this bush possesses a bitter juice whose flavor will persist in the mouth for several days and gives the common name to the plant. Where a specimen plant is needed to protect a colony of some tender plant there is nothing that equals this shrub, as not even the strongest of cattle can make their way through a thicket of it. The plant is recommended for protecting hedges and flower beds where rare or valuable plants are grown.

### MELIACEAE

*Melia Azedarach* L. Umbrella China. This is another plant that is mentioned to caution against its use. The plant itself is very beautiful. Its abundant foliage, quick growth, and clusters of blue flowers followed by yellow berries make it a very desirable ornamental; however this tree is heir to every disease which trees have, and insects are extremely fond of it. As a result most of the trees appear old, very much diseased, and unsightly. The leaves which are early dropped and the large numbers of berries which adhere to the stems and which drop during the winter create a constant chore of cleaning up around this tree. Before planting a chinaberry other species should be considered.



### POLYGALACEAE

*Polygala alba* Nutt. Angel Wings. This is a very peculiar plant. Native of all of Texas. Its special habitat is dry hills. The plant itself consists of a heavy perennial root stalk and a small cluster of all green annual stems aboveground which reach a height of not over six inches. These delicate wand-like stems bear small, light green leaves and are covered throughout much of the summer with delicate white tassel-like flowers. The resemblance of the spray of white flowers suggested the common name. This plant makes an excellent border for sidewalks and for flower beds. It is easily transplanted by digging out the root clusters and dividing them. It is a plant that should be widely used, but so far as known only experimenters have grown it. All it needs is to be planted. It will grow through long periods of time without cultivation.

*Polygala ovatifolia* A. Gray. A species resembling a small shrub. Native to Texas south of San Antonio. The small bush grows to a height of six inches, has a heavy underground root stalk, and bears numerous small ovate leaves. All through the summer new branches bear clusters of pink pear-shaped flowers about one-third of an inch long. This plant is seldom seen as it grows only under the protection of thorny shrubs as cattle relish it for food. This plant should be sought out and made available to the public.

### EUPHORBIACEAE

*Acalypha Lindheimeri* Muell. Arg. Cardinal Feather. An almost vine-like plant rising from a perennial root stalk, stems wiry from two to three feet long, bearing thin lanceolate leaves, and a spike of red flowers at the tips of the branches. Axils of leaves are also adorned with bracts which turn red as the plant reaches maturity. Very ornamental for a rock garden.

*Acalypha radians* Torr. Cardinal Feather. A very peculiar evergreen plant arising from a heavy root stalk. Plant seldom reaches a height of more than four to six inches. It consists of numerous upright stems bearing small woolly leaflets. The pistillate and staminate flowers are borne on separate plants. The pistillate flowers occur as small bright red spikes at the tips of the branches. On the staminate plant the red stamens are very conspicuous as they come from the axils of the large-lobed bracts on the sides of the stems. These plants are very hardy and easily grown in sandy locations. They should be included in all rock gardens and other places where peculiar and interesting plants are grown. Will grow anywhere in Texas.

*Bernardia myricaefolia* (Scheele) S. Wats. Myrtle-leaved Croton. This little known shrub bears a large number of small coriaceous leaves and having the ability to grow under the most adverse conditions should be used wherever such conditions confront the planter. This species

is native to all of Texas west and north of Houston and will grow anywhere planted providing the soil is well drained. In cultivation where the old wood is pruned from the bushes, the fresh growth makes this plant a pleasing sight, and as a specimen or hedge plant it is of value.

*Euphorbia albomarginata* T. and G. One of the prostrate Euphorbias which make a very efficient ground cover and sand binder. This plant is known by the small white margins on both the leaves and floral bracts. It is native of all sections of the state and is very abundant wherever loose blow sands occur. It is an annual or biennial and the numerous prostrate branches do not make roots; thus the entire plant can be lifted from the ground. This plant and other species which closely resemble it should be freely used as sand binders especially where blow sands occur. The seed is easily gathered by cutting the plants and, after drying a short time, threshing the seed. The seed should be planted in the fall of the year by broadcasting over sandy areas. This group of prostrate Euphorbias is called Golondrina by the Mexicans and Flux Weed by ranch people.

*Euphorbia bicolor* Engelm. Snow-on-the-Mountain. A plant growing to the height of about three feet, having a single stem and few short branches. The leaves are lanceolate, somewhat woolly when young. The floral bracts and leaves are edged with white. Native of section 2 and parts of 3 but will grow anywhere planted. The seed is found on the market under the name of Snow-on-the-Mountain, throughout the northern and eastern states.

*Euphorbia heterophylla* L. Wild Poinsettia. A small stemmed plant growing up to two feet in height, bearing numerous lanceolate to ovate leaves which have on their surfaces large spots of pink, red, or brown. The seed clusters and bracts are colored and resemble the cultivated Poinsettia. This is a common weed through the river valleys of Texas. It is a plant for the experimenter. There is little doubt that strains can be selected from this species that will be as beautiful and become as widely cultivated as the exotic species which are offered for sale.

*Euphorbia marginata* Pursh. Snow-on-the-Mountain. This is the more common species in cultivation. In Texas it grows in every part of the state as a weed and no attempt has been made to use it as an ornamental. It, however, has its place where large unsightly areas are to be covered with a green and white covering. It will give good service where new building sites are being improved, as within part of a year large acreages can be given a cover which will be pleasing up to the time of the first frost. Seed is easily gathered and needs no preparation of soil for planting. The seed should be sown broadcast at any time between September and June.

*Jatropha cathartica* (Berl.) Johnston. A very little known but beautiful plant. It occurs in section 3 and doubtless will grow under cultivation in sections 7A, 4A, 4, 4B, 5, and probably others. The plant consists of a large globular tuber much bigger than the plant above the ground. The plant above ground is represented by a cluster of palmately divided leaves

about one and one-half inches across and resembling somewhat the leaves of the castor bean. They are smooth and light green in color and occur as a thick rosette about six inches in diameter. Throughout the summer small umbels of bright red flowers rise to a height of three to four inches above the rosette. This plant has been under observation two years and has given the best of results both as an outdoor plant which will maintain itself and as a pot plant living under shelter. This plant should be made available by dealers as it will become a fine addition to any rock garden.

*Jatropha spathulata* (Ort.) Muell. Arg. Leather Weed. A most peculiar plant. Native to sections 3 and 6. Growing to some extent in 5, 4, and 4B but will grow anywhere. The plant consists of long succulent root stalks about one-half inch in diameter and aboveground stems from eighteen inches to two feet long, bearing numerous spatulate leaves and at times small white to pink flowers in the axils of the leaves. The peculiar thing about the plant is that the stem consists of a brown paper-like bark. The cambium layer is very deep and mucilaginous. The wood fibers are collected in a central body and are small in proportion to the stem. The branches can be bent in any direction so that the plant can be tied into knots without stopping the growth. The mucilaginous substance has led many people to believe that this plant contains rubber; however, analyses have shown that it does not. The Mexicans know the plant as "Sangre de Grado," meaning the blood of the dragon, and use the root as a toothwash, believing that it will cure pyorrhea. As a specimen plant or a small hedge this species will attract attention anywhere. It should be a part of every collection of desert plants.

*Phyllanthus avicularia* Small. The Texas Star Gooseberry. A little known plant. It and its near species are common to all of Texas; however, it is more common in sandy soils than elsewhere. The plant grows as an annual or biennial above the ground and resembles a small spreading tree, reaching a height of only ten or twelve inches. The leaves are very small and so close together as to touch each other along the stems. On the under side of the branches it bears abundant green fruits, each one marked at the blossom end with a small green star. Introduced species, which are shrubs, are grown in some places and the fruits used as substitutes for the gooseberry of commerce. This plant which can thrive under adverse conditions and in almost pure sand soils should be utilized in abundance where a persistent and beautiful plant is needed for a ground cover.

*Ricinus communis* L. Castor Beans. Several types of commercial castor beans have gone wild in Texas. They are known as the red and green castor beans. On the Gulf Coast the red bean is the more common, while in other parts of the state, the green is predominant. This plant recommends itself to those who wish a tall growing species in a garden or elsewhere to produce an abundance of shade on short notice. The plant itself is so common that it is not considered as an ornamental. In many parts of Texas the plant which is annual becomes perennial because of no killing frosts. Commercial.

*Stillingia texana* Johnston. A heavy herb arising from a perennial cluster of roots and bearing numerous upright stalks with lanceolate green leaves tipped by a peculiar cluster of yellowish green flowers. This plant is native to the most of Texas. Other and similar species, hard to distinguish, are found with the above. Where an herbaceous species is needed to attract attention through the summer or to become a member of a row or specimen planting, this plant should be used.

### ANACARDIACEAE

*Pistacia mexicana* H. B. K. A small tree of rapid growth, having long wither-like branches covered with brown bark and bearing numerous pinnately divided small leaves. The plant very much resembles certain species of sumac. It is found native only in a few places along the Rio Grande river; however when raised in cultivation it produces a beautiful ornamental tree. It reaches a height of fifteen to twenty feet and produces many small berry-like fruits which are similar to the pistachio nuts of commerce in everything but size. This plant will do well in all of Texas south of Austin and should be made available to the people by some nursery.

*Rhus lanceolata* A. Gray. Dwarf Sumac. This is the most common form of sumac in the state of Texas. It generally grows to a height of four to five feet, blooms in July, and ripens its thick cluster of red fruits in August, but the fruits stay in place all winter. This sumac can be told from all others because of the leaf-like edges which connect the leaflets and fasten them to the midrib. The water sprouts of this species especially in river valleys sometimes grow to a height of ten or fifteen feet and bear quite large leaves but can be recognized by the connecting leaf tissue. The plant is easily grown from seed or transplanted. It should be used wherever a small tree-like ornamental which has both flowers and fruits that are showy is desired. This is adapted to mass work on hillsides in parks, and is valuable for roadside plantings through rough sections where it is necessary to hide masses of native rock.

*Cotinus americanus* Nutt. Smoke Tree. A member of the genus which has long been cultivated and also confused with an introduced species which is also cultivated. This plant is common only from section 5 but it grows throughout the state. It is a very beautiful small tree or tall shrub. It bears numerous small greenish flowers in early spring which are followed by elongated seed stalks bearing feathery pods. A tree in full fruit looks as if it had a halo of smoke around its top, hence the name. This tree is hard to grow from seed and is not found in great abundance in nature. It can be procured from almost any nurseryman.

*Rhus glabra* L. Sumac of East Texas. A tall-growing sumac reaching a height of twenty feet, bearing huge pinnately divided leaves and large clusters of white flowers followed by even larger clusters of red fruits. In autumn the leaves turn bright red, making it a very desirable tree. It is found in sections 5, 4B, and 1, and will grow in sections 7A, 4A, 4, 2, 3, and 5. Commercial.



*Rhus vernix* L. Poison Oak. This is the most violent of the poison ivies. It is found in bogs in section 1. It is here mentioned only to call attention to the fact that where botanical gardens maintain exhibits of plants that a bed containing all of the poisonous varieties of the genus *Rhus* would be one of great value as it would give the visitors an accurate knowledge of what plants are to be avoided. *R. vernix* does not in any way resemble poison ivy. It has a most beautiful foliage. The leaf consists of a red midrib bearing from three to six pairs of ovate dark green leaflets and a terminal one. These leaves are borne in clusters at the ends of the branches. A person unacquainted with the plant, being attracted by the beauty of the foliage, is likely to come into contact with it. The result is a very violent case of poisoning.

*Rhus virens* Lindh. Evergreen Sumac. Native of sections 7, 5, and 6 and will grow in most of the state. One of the best of this group of ornamentals. It is easily grown, has evergreen leaves, and in the fall of the year bears small white flowers. The flowers are not gathered in clusters like the other sumacs; the fruits are bright red and quite ornamental. The plant can be grown from seed or dug from the wild. Commercial.

#### AQUIFOLIACEAE

*Ilex decidua* Walt. Deciduous Holly or Possum Haw. A small straight-growing tree with deciduous lanceolate leaves, bearing clusters of small yellowish flowers in early spring. After the leaves have fallen, the numerous bright red berries cover the branches. Native in sections 7A, 4A, 4, 4B, 1, 2, 3, and 5 and will grow anywhere in the state. This tree is recommended for mass planting along roadsides where there is moisture; and as a specimen tree for yards and parks.

*Ilex opaca* Ait. American Holly. Native in sections 4B, 1, and 2 but can be grown in 7, 4A, and parts of 3 and 5. This is the most popular of the genus and is called Christmas Holly. It bears on each leaf from five to seven strong teeth armed with spines which give this holly the resemblance to the European holly. It is a most beautiful tree growing to a height of forty feet. The small white flowers are inconspicuous as they are hidden under the mass of the coriaceous leaves; however the large red berries which ripen in late autumn make this a very conspicuous tree. Because of the demand for its branches for Christmas decoration, this tree has reached the verge of extinction. Wherever trees are to be planted where they can be cared for, this tree should receive a place in order to increase its number and the decorative material. Where the branches are harvested a goodly crop can be taken from a tree each year without detriment to the tree. Because of the small numbers left in their native habitat and the difficulties encountered in growing this plant from seed, young plants should be secured from nurseries.

*Ilex vomitoria* Ait. The Evergreen Holly or Yaupon. A most beautiful evergreen shrub bearing numerous small coriaceous leaves and in early spring huge masses of very small yellowish flowers which are followed in the fall by equally numerous clusters of wine-red berries. This plant

is becoming extremely popular as a producer of Christmas decorations. Native of sections 4, 4B, 1, and 2 but will thrive anywhere soft soils and moisture are present. The plant is difficult to grow from seed or to transplant; however as it can be had from nurseries, this shrub should recommend itself to anyone wishing an evergreen hedge which has no thorns and is green throughout the year and adorned by red berries.

### CELASTRACEAE

*Celastrus scandens* L. American Bittersweet. A perennial vine native to sections 1, 2, and 6. It is very common in the Big Thicket and around the edge of Trinity Bay. It consists of a strong growing vine with smooth gray bark. The upper branches of the vine are long and green in color. The leaves are ovate, light green, and borne in numbers. In July the plant bears numerous clusters of small white flowers which in autumn are followed by red fruits about one-third of an inch in diameter. Later in the winter the red outer part of the capsule breaks, exposing the very dark red seed underneath. This plant has long been a favorite of floriculturists in the eastern and northern states. It should be used everywhere that plantings of a permanent nature are to be made. This vine can be used in connection with a tall growing plant, especially if a tree has deciduous leaves. Commercial.

*Evonymus americanus* L. Strawberry Bush. A small shrub growing in shady, moist localities in sections 1 and 2. The stems are covered with green bark and are four angled. The obovate leaves are thin and the plant green. In the fall the bush is adorned with brilliant red fruits about one inch in diameter, the outer part of which is somewhat roughened. Later in the year the capsule breaks exposing several highly colored seeds. It is doubtful if this plant can be used for general work; however where water gardens or lake and river fronts are to be landscaped, this plant can be used to good effect. As a specimen plant, a low hedge, or member of a group of water living shrubs, this will give good service. This shrub has been used in the southeastern states for years in landscape work. Commercial.

*Evonymus atropurpureus* Jacq. Wahoo. A small round-topped tree with gray bark below and green above. It bears numerous small white flowers in late spring which are followed in August by large three- or four-angled fruit pods, which are green when first produced but afterwards turn bright red. As soon as the leaves fall from the tree in autumn, the pods open and display bright red berries in the lighter red pods. These persist throughout the winter. This tree should grow anywhere in sections 7, 7A, 4A, 4, 4B, 1, and probably in parts of 5 as it is hardy as far north as Chicago, Illinois. It is recommended for use in yards where a small good-looking tree is needed and for specimen plantings in parks and along roadsides. Commercial.

*Mortonia Greggii* Gray. A low-growing shrub native to the Lower Rio Grande Valley. The stems grow to the height of about one inch and are covered with very numerous leaves so close together that they hide the stems. These leaves are about one-eighth of an inch wide and one-fourth

of an inch long. In spring this plant gives rise to a number of flower stems, six or eight inches long, each one of which bears numerous white flowers about one-fourth of an inch across. The plant has wonderful possibilities as a hedge and border plant. It probably will grow anywhere in section 8 and probably farther north. Some nursery should make this available.

*Schaefferia cuneifolia* A. Gray. Desert Yaupon. Native of sections 4A, 4, 3, 5, and parts of 7A and 6. A low-growing shrub with small oval leaves about one-half of an inch long borne in large numbers. In early spring and during the summer it bears many small green colored flowers. They are followed in time by small red berries. The name Desert Yaupon has been applied to it because of its resemblance to the *Ilex* of East Texas. This plant is coming into use for Christmas decorations throughout the territory where it is native. The plant is very slow in its growth but transplants easily and can be trimmed to shape. This is one plant that should be used by those desiring low hedges for formal gardens and specimen plants in floral architecture. It can easily be transplanted or grown from seed.

#### ACERACEAE

*Acer floridanum* (Chapm.) Pax. Southern Sugar Maple. This is native to section 1, but under cultivation will grow anywhere east of Austin. It is a typical sugar maple with dark-colored bark and smooth gray branches, and grows as a shapely round-topped tree. It should be included in park and roadside plantings and for trees in yards. Commercial.

*Acer grandidentatum* Nutt. var. *brachypterum* (Woot. and Standl.) Palmer. Big Tooth Maple. A typical sugar maple native to the mountains of Trans-Pecos Texas. This tree will probably thrive also in sections 1, 2, and 9. It should be used in plantings in its own territory. The tree now is confined to almost inaccessible canyons, as those growing on flat lands were long ago used as a source of fire wood and building material. The tree is easily grown from seed and is worthy of being perpetuated and made popular by nurseries.

*Acer negundo* L. Box Elder. The box elder and its variety, the Texas Box Elder, occur throughout the state. They are of rapid growth but do their best in moist locations. They are short-lived trees and require considerable attention to give them a neat appearance. They have, however, to their advantage the rapidity of growth which will give good shade within a few years. Commercial.

*Acer saccharum* Marshall. Sugar Maple. The common sugar maple of the United States will grow anywhere in Texas if given proper care. Commercial.

*Acer saccharinum* L. Soft or Sugar Maple. A most popular tree for roadside and park plantings in the North because of its rapid growth. It is given here to warn against its extensive use, as this tree seems to be unable to stand the sun and temperature of Texas except in the extreme northern part of section 7. Commercial.

*Acer rubrum* L. Red Maple. This maple and its several horticultural varieties are natives of section 4B, 1, 2, and 3. The tree is a small-growing maple with gray bark below and bright red above. The winter buds and flowers are brilliant red. In its habitat it grows in swamps or swamp-like situations; however it does well anywhere in sections 1, 2, and parts of 4, 4B, and 3. Where a single small tree is needed, this is recommended. Commercial.

*Acer saccharum* Marsh var. *sinuosum* (Rehd.) Sarg. Balcones Escarpment Maple. A peculiar form of sugar maple found only along the Balcones Escarpment at the southern edge of section 5 being known only from five counties. This is a small straight sugar maple with dark-colored bark and bearing toothed leaves. Because of its rarity this tree which is adapted to the central part of Texas should be grown by nurseries and made available to the public.

### AESCULACEAE

*Aesculus discolor* Pursh. The Woolly Buckeye. This is a small growing buckeye tree which bears both light red and light yellow flowers. The leaves are very large and attractive. The fruits are about two inches in diameter. It is a quick-growing tree and where shade and moisture are available is fine for park or roadside work. A single one of these trees is very attractive in a yard. Commercial.

*Aesculus glabra* Buckl. Tree Buckeye or Horse Chestnut. A large tree confined to the eastern part of the state where it grows in moist situations. The wood is very light but tough. It is hard to find an old specimen of this species because of the great demand made in past time on this species for ox yokes, an implement which necessitated a very strong piece of material and yet one which was light. The wood is durable as is attested by the numbers of ox yokes which are still extant. This tree should be propagated and made abundant through roadside and park plantings as it has its place among the forest trees of Texas.

*Aesculus arguta* Buckl. A tall-growing Buckeye, found throughout the state. It is to be known by the large peculiarly formed leaflets which make a very attractive tree in the summer. It should be used in roadside and yard plantings. Commercial.

*Aesculus Pavia* L. A name of an eastern low-growing, red-flowered buckeye but in Texas applied to a small tree which is common in sections 4A, 4, 4B, 1, and 3. In early spring this shrub bears large clusters of dark red flowers which are followed in the early fall by seed pods sometimes three inches in diameter. This form is one of the best for planting in yards and along water courses, as it is easily grown and will bloom the third year from seed. This form is sufficiently distinct to warrant a specific name.



## SAPINDACEAE

*Cardiospermum Halicacabum* L. Balloonvine. An annual vine of rapid and vigorous growth. The plant is native to the overflow parts of rivers of Texas. Following overflows, drifts, dried mud holes, and other unsightly places are covered with the thick mass of feathery-leaved vines. There are about as many white flowers as leaves. A little later the flowers give way to balloon-shaped capsules about one inch in diameter. These capsules contain a few black seed, each one of which bears a heart-shaped white spot giving the name to the plant. This vine has been in cultivation for many years. Seed can be purchased anywhere.

*Cardiospermum microcarpum* H.B.K. Perennial Balloon Vine. This is a plant native to section 3 and will probably grow anywhere in the southern half of Texas. It is a low-growing woody vine which produces throughout the summer abundant dark green foliage. After midsummer it produces long sprays of white, rather showy flowers which are followed by balloon-like capsules about one-half inch in length. The capsules are bronzed and give the plant a very peculiar appearance, making it a thing of beauty. It is a honey plant throughout its native range and should be planted to cover trellises, as a background for bed plants, and cover for fences.

*Sapindus Drummondii* H. and A. Wild China, Western Soap Berry. A small tree which is nowhere abundant but which occurs in every section in Texas. It bears numerous pinnately divided leaves and clusters of white flowers of such a shape and color that the tree is often called wild ligustrum. In the fall of the year these flower clusters become bunches of yellow grape-like berries. The outside pulp is yellow and the seed jet black. This pulp has properties that make it valuable to the manufacturers of varnish and floor wax. The tree is recommended for planting where there is need of a native tree that can stand the weather and take care of itself. Commercial.

*Serjania brachycarpa* A. Gray. A perennial vine common to the sections 4, 4B, 2, and 3. The vine very much resembles clematis and is often mistaken for it. However this vine remains green throughout the year and bears in the fall and winter a large number of balloon-like capsules more than an inch in length and having from three to five sides. This vine is recommended for use in sections 4B, 1, 2, and 3.

*Ungnadia speciosa* Endl. Mexican Buckeye. A tall growing shrub or at times a tree. Native of most of Texas. The wand-like stems of the shrub are dark colored. In early spring it bears clusters of pink flowers about one and one-half inches across. The leaves come out as the flowers fall. By the first of June the tree is adorned by very peculiar three-lobed pods which bear three or four small black buckeyes. The pods open later in the year but not sufficiently to allow the buckeyes to fall from the case. The leaves fall early and leave a very peculiarly adorned bush that holds these pods through the winter. The plant is looked upon by the beekeepers as a source of early honey. It is very ornamental and should be more extensively used. It is most easily grown from seed.

## RHAMNACEAE

*Adolphia infesta* (H.B.K.) Meisn. This shrub which is very common in Trans-Pecos Texas seemingly has received no common name. It is confused in the Big Bend country with allthorn. They, however, should not be confused as *Adolphia* is of more slender growth and seldom reaches a height of more than a few feet, while allthorn becomes almost tree-like. For a desert or rock garden *Adolphia* has a place. The plant is undoubtedly easily transplanted as it has been abundantly used throughout its habitat in roadside and advertising work. Commercial.

*Berchemia scandens* (Hill) Trel. Rattan, Supple Jack. A beautiful vine-like *Rhamnus*; grows as a vine with smooth green bark which cannot be separated from the wood. It attains a diameter of as much as six inches and will grow to the tops of the tallest trees. The leaves are about one inch long, ovate, and beautifully veined. Through the spring and summer the vine is covered with clusters of white flowers which are the source of much of the honey of East Texas. During the fall and winter these flowers are replaced by small blue berries which are very much appreciated by migratory birds. This vine will grow anywhere in Texas where there is moisture and some shade to protect the vine until it is well established. It should be very largely used in park and stream landscaping. Commercial.

*Ceanothus americanus* L. New Jersey Tea. A small low growing shrub found in almost every section of Texas. It seldom grows more than two to three feet high and bears in spring dense clusters of white flowers. The seed pods which fall are almost as ornamental as the flower clusters. This shrub bears no thorns; it can be easily transplanted or grown from the seed, and makes a beautiful hedge. Commercial.

*Ceanothus Greggii* A. Gray—Gregg's *Ceanothus*. A large-growing form of New Jersey Tea. It is a native of sections 7A, 4A, and 5. It also should be more largely used for hedge work.

*Ceanothus ovatus* Desf. Red Root. A low growing shrub found in sections 4B and 1 but will grow under cultivation in all of Texas east of Austin. This plant grows to a height of not more than a foot, and is covered throughout the spring and early summer with dense clusters of small white flowers. The leaves are oval and borne in great quantity. This little shrub makes a fine low hedge or border plant for permanent beds. It is easily transplanted. A red dye can be procured from its roots. Commercial.

*Colubrina texensis* (T. and G.) A. Gray. Hog Plum. An unarmed low-growing desert shrub; the leaves light green in color, small and rough. The branches are gray and zigzag. In early spring this bush bears a large number of peculiar yellow flowers which are followed in summer by dry capsules about one-half inch in diameter containing hard seed. The plant has little in its favor with the exception that it will grow anywhere, is easily transplanted, and can be trimmed to shape. This shrub should be used wherever hedges or backgrounds are needed in sections 4A, 4, 4B, 5, and 6.

*Condalia obovata* Hook. Brasil. Shrub or low-growing tree bearing abundant ovate green leaves. In the fall of the year the tree is generally covered with small, red, edible berries which are much sought after by birds and children. This tree does not grow rapidly but produces many leaves so that it makes a fine tree for yard planting. It has few thorns located at the tips of the branches. Its wood is peculiar in that it is easier broken than cut. It is a favorite stove wood of those living in sections 3, 5, and 6.

*Condalia obtusifolia* (Hook.) Weberb. Lote. This small tree-like shrub is also called Texas Black Haw and Texas Buckthorn. It is one of the most widely distributed plants in the state and is known everywhere as a nuisance. When it gets a start no amount of digging will eradicate it; however this is in its favor when one wishes a plant to help in the stopping of erosion. In places where it has been used for that purpose it has been found to be just the plant. It also should be used by anyone wishing a small low-growing tree that has attractive branches and fruits.

*Karwinskia Humboldtiana* (R. and S.) Zucc. Coyotillo. A shrub common to sections 3 and parts of 5 and 6. A low-growing plant with smooth brown bark and bearing beautifully veined, dark green leaves. In early summer the bush is covered by numerous green flowers which are followed during the winter with shiny brown berries. The shrub always has a fresh vigorous appearance. It is easily transplanted by root divisions and has been utilized to some extent in section 3 in yard work. This plant is destined to become an ornamental throughout the southern half of Texas; just how far north it will grow is problematical. This species has a reputation of being poisonous to livestock; however it is seldom eaten by them if there is anything else to be had, and it is to be said that many of the favorite ornamentals of commerce also possess poisonous qualities. This species should be made available to the growers of native plants.

*Rhamnus caroliniana* Walt., var. *molle* Fernald. A small tree with almost white bark, growing to a height of from twenty-five to thirty feet. It is native of section 5 but is also found in parts of 4A and is growing under cultivation in section 4B. The tree is upright in its manner of growth, bears numerous ovate, green leaves, and in the fall of the year has a large cluster of red berries. The plant is easily grown from the fruits and can be transplanted from the wild. This is a model where a single small tree is needed in parks or in a yard.

#### VITACEAE

*Cissus Ampelopsis* Pers. Simple Leafed Ampelopsis. A strong-growing vine resembling a grape. It is of quick growth, produces very large leaves, and makes a nice cover for any kind of a trellis. It produces a few small, blue grape-like fruits which are edible. This vine is recommended where a large amount of space is to be covered by a hardy vine. It is adapted for river banks and to protect the sides of ravines and steep moist hills. Commercial.

*Cissus arborea* (L.) Des Moulins. Pepper Vine of South Texas. A rapid-growing vine bearing many pinnately divided leaves, small yellow flowers and clusters of red berries. This vine is a native to all of Texas east and south of Austin, but will grow anywhere planted. It has in its favor its ability to grow under the most trying circumstances. As a plant to aid in the control of erosion in the southeastern part of Texas, this plant is excellent. As a quick cover for a trellis or similar structure, one can make no mistake in trying this vine. Commercial.

*Cissus incisa* (Nutt.) Des Moulins. Cow Itch or Yerba del Buey. A strong-growing vine, annual above ground, bearing a three-parted succulent leaf. This plant is confused with poison ivy and is wrongly accused of being poisonous to the skin of cattle. So far as is known, this plant has no objectionable features. It grows from woody tubers which are produced in abundance. To grow this plant, it is necessary only to secure one of these tubers and plant it. Sometime during the year it will put up a stalk which may grow to a length of thirty or forty feet, bearing numerous branches and numerous succulent green leaves. In the fall of the year it is covered by blue-black grape-like fruits which are not poisonous but are not palatable. They are favorites of birds. Because of the ease of transplanting, this vine is recommended to anyone wishing a cover for any kind of a shelter.

*Parthenocissus heptaphylla* (Buckl.) Small. Seven-leafed Ivy. This is the common Texas form of the Virginiana Creeper or woodbine. *P. quinquefolia* (L.) Planch occurs in sections 4, 4B, and 1, while *P. heptaphylla* occurs in sections 7A, 4A, 4, 3, and 5. Both vines are easily transplanted or can be grown from cuttings. They live through many years making a fine growth, are not poisonous, and give a desired shade throughout the summer. In fall the leaves turn red which adds to the attractiveness of these vines. Commercial.

*Vitis candicans* Engelm. Mustang Grape. This is perhaps the best known vine in Texas and will grow anywhere within the state. Where a tall-growing beautiful vine is needed for park or roadside plantings, the mustang grape should be the choice. It has many purposes besides that of supplying shade and beauty. The grapes themselves have some commercial value. The fallen fruits are a favorite food of turkeys and other poultry. Where one wishes to raise other grapes the more choice forms can be grafted into a mustang root, thus assuring longer life for the introduced grape.

*Vitis Lincecumii* Buckl. Lincecum's Grape. A peculiar vine found in sections 4, 4B, and 6. It grows more as a shrub than as a vine, its longest branches being not more than four feet. The fact that this grape will grow in almost any kind of soil, always looks fresh, possesses large beautiful leaves, and under protection from livestock, produces each year an abundant crop of fair-sized edible grapes, makes it a valuable hedge, a screen to hide foundations, or a windbreak.

*Vitis monticola* Buckl. Mountain Grape. A species native to sections 7A, 4A, and 5 and probably elsewhere. The plant produces numerous small stems of small diameter which grow to a length of twenty to thirty



feet. The leaves are not large, being less than two inches in length. They are light green, smooth and thin. In August and September this grape, which grows more like a bush than a vine, produces quite large clusters of dark blue grapes. These are much sought after for preserving by those who live in the vicinity. This vine has the properties of looking fresh and prosperous no matter what kind of weather. It has been used to considerable extent for covering trellises and fences throughout the Edwards Escarpment country and should be used elsewhere. There are sixteen species of wild grapes in Texas and most of them will pay to cultivate. In selecting a vine which is expected to give shade through a number of years, a grape native to the section where it is to be planted should be chosen.

*Vitis rotundifolia* Michx. Muscadine Grape. A grape found largely in sections 1 and 4B but will grow under cultivation in 3, 5, and 4A. It is found growing in ravines and occasionally along river banks. The main vine grows to considerable length, however the laterals are short and much branched. The leaves are less than two inches in diameter and are not shaped like grape leaves. This species produces the most peculiar fruits of all of the grapes. While it produces abundantly, the cluster seldom bears more than four fruits. These are sometimes three-fourths of an inch in diameter. The rind is quite thick and the pulp of the interior very pleasing to the taste. This grape is of commercial value especially in the southeastern states. It and its white variety should be grown in eastern Texas.

### TILIACEAE

*Tilia* Linn or Basswood. This is the most famous honey-producing tree of the United States. However in Texas it does not occur in sufficient quantity to be of great value to the beekeeper. Four species occur but nowhere in any great numbers.

*Tilia caroliniana* Mill. Basswood of the Southeastern United States. It is found sparingly and in local colonies in Texas east of Austin. It is one which should be used in parks and roadside plantings throughout East Texas. It is a tall stately tree with large heart-shaped leaves. Commercial.

*Tilia floridana* Small. This is the form of basswood found in central Texas where it occurs in small colonies in the canyons of the eastern Edwards Plateau country. Its numbers should be increased in this section by roadside and yard plantings.

*Tilia phanera* Sarg. The Basswood having the widest distribution in Texas. The tree is found in some places in section 5 in sufficient numbers to make it valuable to the beekeeper. The trees are of such size that some lumber is made from them. It is of quick growth and should be used in roadside plantings through sections 4, 4B, and 1.

## MALVACEAE

*Callirrhoe digitata* Nutt. Annual Wine Cup. Native of central Texas and will grow anywhere planted. The plant under cultivation reaches a height of from two to three feet and bears numerous wine-red flowers about one and one-half inches in diameter. The seed should be sown about Christmas and blooms may be expected by the first of April. It will bloom throughout the summer. The seed of this plant and its several horticultural varieties are on market.

*Callirrhoe involucrata* (Nutt.) A. Gray. Perennial Wine Cup. A very widely distributed perennial plant but not very well known. The underground root is a quite heavy tuber which gives rise to annual leaves and flowers. The leaves seldom reach a height of more than six to eight inches. The plant bears numerous wine-red flowers some of them reaching a diameter of more than two inches. This plant has wonderful possibilities as a border or bed plant in yards as the tubers can be planted and will remain there giving service year after year. Commercial.

*Cienfuegosia sulphurea* (St. Hil.) Garcke. A little known but beautiful member of the mallow family. It is a low-growing perennial shrub-like plant native of the Gulf Coast of Texas. The stems are red brown and weak. The leaves are inconspicuous and not borne in numbers, however, in early spring and again after rains, this plant bears yellowish green flowers about two inches in diameter which are extremely beautiful. In a few places where they have been transplanted to yards and given attention, the branches have made abundant growth and the plant has produced many more flowers than it does in nature. This plant has wonderful possibilities as it needs little attention with the exception of protecting it from livestock and other plants. It is a native of sections 4, 4B, 2, and 3.

*Hibiscus cardiophyllus* A. Gray. Silver Leaf Hibiscus. A typical hibiscus plant with heart-shaped silver gray leaves growing to the height of four to five feet, bearing throughout the entire year five-petaled red flowers from one and one-half inches to three inches in diameter. This plant deserves the attention of everyone in sections 4, 4B, 2, 3, and 5 who desires a beautiful ornamental.

*Hibiscus lasiocarpus* Cav. The Hairy-fruited Rose Mallow. Native to sections 1, 2, 3, and in some places in 4 and 4B. This plant which is well known in cultivation will grow anywhere that water is available in parks or along streams. It makes a fine plant to grow in connection with a lily pool or goldfish pool. Commercial.

*Hibiscus militaris* Cav. The halbard Leaf Rose Mallow. This plant is probably more hardy than *H. lasiocarpus*. The flowers are produced in greater abundance and the plants only need moist ground in which to grow. They do not need any large quantities of water. Many places they are grown in the blackland prairies of section 4. It is hardy and blooms abundantly in the vicinity of San Antonio on the upland. It should be very widely used. Commercial.

*Hibiscus Moscheutos* L. Rose Mallow. This is the seaside mallow and should be abundantly planted through sections 2 and 3. It will, however, grow anywhere and is a nice addition to any collection of water-loving plants. Commercial.

*Malvaviscus Drummondii* T. and G. Shrub or small tree found abundantly through sections 4A, 4, 4B, 1, 2, 3, and 5 and will grow anywhere planted. It produces numerous green leaves two and one-half inches to three inches across. Through the summer it bears spikes of bright red malva flowers which are followed by light red apple-like fruits. Because of the hardness of this plant it should be used for roadside planting and in parks. As a specimen plant it is very beautiful; however to obtain the best results, this plant must have the old wood cut from it at least every two years. This is a native plant much resembling the Turk's Cap of commerce.

*Sphaeralcea coccinea* (Pursh) Rydb. A low-growing herb having a perennial underground root stalk and a low cluster of woody annual stems, which bear throughout the summer numerous pink to red malva flowers. This is one of the best plants for roadside and park plantings, as it can maintain itself in spite of much neglect and a lack of moisture. For yard work this plant makes a fine bed or can be used as a border plant. The varieties of species are found throughout sections 7, 7A, 4A, 4, 3, 5, and 6 and will probably grow anywhere within the state. It can be transplanted easily by root division.

*Sphaeralcea angustifolia* (Cav.) Don. This is a malva-like plant, perennial, and grows to a height of fifteen inches. It is white through pink in color, and one that attracts attention when seen along roadsides and in pastures. It should be very widely cultivated, as it will maintain itself and give an all-summer bloom with little care. The plant should receive some cultivation and protection from livestock. It can be propagated by root division. The malva family contains a large number of ornamentals. Those wishing to obtain new and attractive ornamentals should watch their native species of this family and transfer them to their proving grounds for testing.

## HYPERICACEAE

*Hypericum aureum* Bartr. Golden St. John's-wort. A native of section 5. A low-growing shrub with hard green leaves and bearing at intervals throughout the spring and early summer numerous golden yellow flowers up to two inches in diameter. This shrub is excellent as a bedding plant, especially along edges of walls and foundations of buildings where it will grow in dense shade, thus filling a place which no other plant will occupy. The bush is easily transplanted. Commercial.

## TAMARICACEAE

*Tamarix articulata* Vahl. Aethyl or Evergreen Tamarix. A tall-growing salt cedar which is evergreen but does not do well except in the southern part of section 3. It is recommended for extensive use through that section as a windbreak, a roadside tree, and for yard planting.

*Tamarix gallica* L. Salt Cedar. The most common in cultivation. It has become very abundant throughout Trans-Pecos Texas and the high and low plains where it becomes the dominant plant. It can withstand a great deal of cold and should be used for windbreaks and hedge plantings.

*Tamarix pentandra* Pall. A form of *Tamarix* which is almost tree-like in its growth. The bark is red and the flowers a very bright red. This plant should be used in yard work throughout all of the state of Texas. All species of this genus are commercial.

### FOUQUIERIACEAE

*Fouquieria splendens* Engelm. Ocotillo. This most spectacular plant of sections 5 and 6 has become very popular for roadside and park work during the past few years. It needs little introduction. It can be had from nurseries, and where sufficiently well drained lime soils are available, it will give good service.

### VIOLACEAE

*Hybanthus verticillatus* (Ort.) Baill. A common plant throughout sections 7, 7A, 4A, 4, 4B, 1, 3, 5, and 6 but is a little known plant. It consists of a perennial bush-like growth about one foot high above the ground, bearing numerous small lanceolate leaves and during most of the summer having very numerous small violet-shaped flowers. These are red and white in color and not over a sixteenth of an inch in diameter. The plants when once established are very attractive and under cultivation grow to double the normal size. This plant can be propagated either by transplanting from the wild, or from seed. It can be found almost anywhere in the state during the first part of the summer. As a plant for a rock garden, or where a choice collection of plants is maintained, this is a fine addition.

*Viola lanceolata* L. Blue Violet of sections 4A, 4, 4B, 2, and 3. It has leaves about two inches long and one-half inch wide, and bears in early spring numerous blue violets. It is a choice violet to grow in yards, especially wherever shade and moisture are abundant. Commercial.

*Viola missouriensis* Greene. The most abundant blue violet in Texas. Found in sections 4A, 4, 4B, 1, 3, 5, and probably elsewhere. This violet, which is characteristic of the family, bears pale blue flowers throughout early spring and can be found in almost any piece of sheltered woodland especially along water courses. Responds to cultivation and makes very abundant growth. Commercial.

*Viola pedata* L. Bird Foot Violet. Sometimes called Wild Pansy as it has three petals of light blue and two petals of maroon. The leaves are divided palmately into from five to seven divisions supposed to resemble a bird's foot, hence its name. The plant is found throughout sections 1 and 2. It responds to cultivation and can be multiplied by root division or by seed. This rapidly disappearing wild pansy should be very extensively grown in parks and yards by those who wish rare and choice plants.



*Viola primulifolia* L. Primrose Violet. A species common to East Texas wherever very moist conditions occur. This violet does not require shade but will grow on the edge of lakes in the full sun. The leaves are about one-half inch wide and three to four inches long. The numerous violet-shaped flowers produced are white with an indication of pink. The plant is very easily grown by root division and should have a place in every water garden. It can be grown in small lily pools and in some places it is even grown in aquariums. Commercial.

*Viola sagittata* Ait. Arrow Leaf Violet. Native of woodlands of sections 1 and 2 but is grown under cultivation in sections 4, 4B, and 3 and will grow elsewhere wherever it is given some shade and moisture. Under cultivation the plant grows much larger and produces many more flowers than it does in the wild. Commercial.

Each of the fifteen species of violets, found in the state, and of the numerous varieties within the species, is worthy of a place in cultivation. Flower growers are advised to seek out and cultivate their local violets.

### PASSIFLORACEAE

*Passiflora incarnata* L. May Pop. This is the common and well-known red passion flower of East Texas. It maintains itself in the wild throughout southeast Texas and is grown to such an extent in the north-eastern part of the state that it can be found native almost anywhere; however it is killed by heavy frost. The plant needs no introduction. The large red purple and white flowers are ornamental through the whole summer and the peculiarly formed fruits eagerly sought by children and poultry are quite ornamental. Commercial.

*Passiflora lutea* L. A perennial tall-growing passion vine, very common but little known. The underground part is perennial. In spring a number of stems come from this root and climb on the nearest support. The leaves are three-lobed about one and one-half inches across and are variegated in color. The stems are light green and climb by tendrils. As a rule the vine reaches a height of from sixteen to twenty feet. In the middle of summer it bears numerous yellow typical passion flowers about three-fourths of an inch in diameter. These flowers are followed by purple berries. The berries have a juice which possesses the property of imparting a lasting purple color to anything stained with it. It was used by the Indians as a source of dye. This plant can be grown from seed or by planting in root cuttings. It is a very handsome vine and will repay the work placed upon it.

*Passiflora tenuiloba* Engelm. Small White Passion Flower. This very little known vine grows to a height of from four to five feet and may have a number of stems arising from the same perennial underground root stalk. The vine is peculiar in that the leaf has a width of nearly three inches and a length of less than one-half inch which gives it a very odd appearance. It seems as if the leaves were attached at the

wrong place. In summer the plant produces numerous typical white passion flowers almost one inch in diameter which are followed later by dark green pulpy fruits. This plant makes an excellent addition to any collection of rare plants or to a rock garden. It is best obtained by hunting out a plant early in the spring and digging out the perennial root. The plant can be told by the peculiar leaves which are so much wider than they are long.

### LOASACEAE

*Cevallia sinuata* Lag. This plant which is found in sections 7, 7A, 5, and 6 will grow anywhere that Cactus will grow, especially if it receives the attention of the cactus enthusiast. The plant grows from a perennial root. Aboveground it is an intricate mass of spiny leaves of deep green, and bears in the late summer clusters of very peculiar pale pink flower stalks. The flowers are so hidden within the spinose bracts as to be inconspicuous. As a member of any cactus collection or a plant for any rock garden there is nothing better than this. It can be grown from seed or obtained by root cuttings. Commercial.

*Eucnide bartonioides* Zucc. Plant native to sections 4A, 4, 4B, 1, 3, 5, and 6. The plant is vine-like, sprawling over shrubbery. The green leaves are covered with hooked hairs by which the leaves become attached to the clothes of the passers-by so that an encounter with one of these vines leaves the victim covered with green leaves which can be removed only by shaving them from the clothes. Throughout the summer this vine-like relative of the cacti bear small yellow cactus-like flowers. As an oddity and as a member of a rock or desert garden, this plant is admirable. It has a perennial root stalk, making it easy to transplant.

*Mentzelia*. A genus very close to Cacti. It has ten species scattered through the state all of which are worthy of cultivation. It is known as a plant growing from a heavy underground tuberous root. The stem is upright, bearing numerous lanceolate leaves which are somewhat smooth and bear bristles. The flowers are borne on the upper part of the plant, in the axils of the leaves in some species, in terminal clusters in others. The flowers are white or yellow having from a few to many petals and a large number of stamens. They have the peculiarity of opening late in the afternoon and closing at sun-up. Among the species *Mentzelia decapetala* (Pursh) Urban and Gilg.; *Mentzelia multiflora* (Nutt.) A. Gray; and *Mentzelia nuda* (Pursh) T. and G. offer the best opportunities for the beginner. Those seeking to grow these plants should avail themselves of species in their neighborhood until they become acquainted with the manner of their growth, at which time they should introduce species from elsewhere. One of the finest of this group is a large white-flowered variety which is found growing on the high plains along the breaks of the Canadian and Palo Duro. These flowers sometimes are four inches in diameter.

### CACTACEAE

This family which contains about one hundred species is too popular and well known to need any comment. There is probably not a species occurring within the state but which is now grown in gardens. In case one wishes information as to the habitat and growing of these plants this information can be found in "Texas Cacti" by Ellen D. Schulz of the Witte Memorial Museum, San Antonio, Texas, who is also the author of a book dealing altogether with the cultivation of cacti.

### LYTHRACEAE

*Lagerstroemia indica* L. Crape Myrtle. A well known shrub or small tree. Introduced but has become a native over large areas in Texas. It also has produced many varieties. It is commercial and if one is satisfied with a plant that produces large numbers of showy flowers and will grow with little attention, there is no better. Commercial.

*Lythrum alatum* Pursh. Winged Loosestrife. A little known but beautiful annual, growing to a height of one foot or more and found in certain localities throughout central Texas. The stem of the plant is fluted and the branches bear small wings of leaf-like material. Throughout the spring and summer the plant is covered with rows of bright red flowers nearly one-half inch long. A group of these plants gives a great deal of color to a small space. The plant will grow equally well in soft soils that are cultivated and watered as in swamp lands. The seed which can be collected by threshing the dried stalks should be sown in February. The plant will bloom through the summer and fall. There are several other species in this genus, all of which bear a close resemblance and should be tried for cultivation. Introduced relatives of this plant are among the choicest flowers of gardeners.

### MELASTOMACEAE

*Rhexia mariana* L., var. *leiosperma* Fern. and Griseb. Maryland Meadow Beauty. A little known plant growing in marshes and damp situations but grows also in the open sun. The flowers are about the size of the red evening primrose. The plant is an annual with an upright stalk and bears beautiful red flowers for at least three months during the spring and summer. This is one of the rare plants of Texas and should be grown wherever lily pools or water plantings are available.

*Rhexia virginica* L. Meadow Beauty. This differs from the above species as it is a perennial and almost a shrub. It grows in section 1 and will grow in 4A, 4, and 4B. The flower resembles a small red evening primrose and is about three-fourths of an inch in diameter. The flowers are borne one at a time making the bloom of the plant last through the summer. This plant has wonderful possibilities as a perennial ornamental. It can be grown from seed or obtained by root division.

## ONAGRACEAE

*Gaura coccinea* Pursh. Bee Blossom. Wild Buckwheat. A perennial herb growing to a height of two feet. The plant is branched at the base, stems numerous, and covered with thin spatulate leaves about three inches long. Each branch bears a spike of small five-petaled flowers which are red and in age turn scarlet. It is an excellent honey plant. It grows readily and under adverse conditions. It is a fine roadside cover and will persist in spite of much neglect and pasturing. When cultivated in a yard, it responds to such an extent that it is one of the most beautiful of this family. It is easily propagated by root division and will thrive anywhere in Texas west of Houston.

*Gaura odorata* Sesse ex Lag. This species is so similar to the above that they are confused by most people. In this species, however, the flowers are white when they open and turn pink before they fall. It also differs from the first in that it opens late in the afternoon and stays open all night, while the other opens in the full sun. It is another excellent honey plant and of great value as a park and wayside ornamental. A native of all of Texas with the exception of sections 1 and 3.

*Gaura parviflora* Dougl. Velvet Leaf Gaura. A tall-growing biennial, covered with ovate velvety leaves. It commences to bloom in early spring and continues through the summer and fall, the plant reaching a height of seven to eight feet. It bears numerous spikes of very small pinkish gaura flowers. It is a very common roadside weed but under cultivation it is a spectacular plant, as it responds readily to care and rewards the grower by an immense growth and numerous flowers. As a roadside plant to supersede ragweeds, cockleburrs and other unattractive plants, this Gaura is excellent because of its strong growing habits and the fact that it will reseed itself. It should be used wherever new work on a large scale is being done. Later it can be replaced by other and more showy species.

*Gaura suffulta* Engelm. Woody Gaura. Annual or perennial; native throughout central Texas especially in soft soils. The plant is peculiar in that it grows a heavy stalk about one foot high with much branching at the top. From these branches come numerous spikes of pink and white Gaura flowers. After the seed of these flowers are ripened, a set of stems will arise from the old to a height of about one foot and a new branch system developed from which a second set of flower stalks will arise. This process will be repeated four or five times during the summer depending on the rainy period. This habit makes this species a good plant for small yards and for collections of curious plants. Easily grown from seed or by digging the plants in the wild.

*Jussiaea diffusa* Forskl. Primrose Willow. Perennial found in sections 4, 4B, 1, and 2, and probably even in the state where marshy conditions exist. The seed are dispersed by birds so that this is one of the first plants to become established around newly made lakes and ponds. The plant very much resembles a willow but bears throughout the summer numerous bright yellow four-petaled flowers over one inch across. The



plant grows on the surface of the mud in shallow water and is easily transplanted by pulling up a portion of the plant and taking it to the new location. This plant should be used in every water planting through the state. The bright green leaves and numerous yellow flowers make it a spectacular plant.

*Jussiaea suffruticosa* L. Primrose Willow. This very much resembles the above but grows on the edges of lakes rather than in the water. It becomes woody and bears a number of yellow flowers up to two inches in diameter. The plant will persist throughout many years and will give good service as an ornamental along any water course. Native of all central Texas where damp conditions exist.

*Oenothera biennis* L. Evening Primrose. The most common of the yellow evening primrose in central Texas. As it grows from a perennial root stalk, it is easy to maintain a perpetual bed of these flowers as they will reseed themselves on the piece of land and give a continuous bloom, with the exception of in the middle of the summer. It has numerous bright yellow flowers and grows to a height of better than two feet. The plant is recommended wherever a large mass of yellow flowers is needed.

*Oenothera heterophylla* Spach. Tall Evening Primrose. Native to sections 7, 7A, 4A, and 5. The plant does its best in any soft soil. It puts up a strong stem to a height of two and one-half inches when it begins to bloom. The flowers are yellow, almost three inches across, and are borne freely throughout the summer. The plant at times reaches a height of six to seven feet. It received its name from the varied forms of the lower leaves. This plant is more easily grown from seed than obtained from the wild. The seed pods should be gathered and the seed propagated in a coldframe, then transplanted to the permanent location. As a specimen plant, this is one of the unique ornamentals to be brought from the wild.

*Oenothera laciniata* Hill. Mexican Evening Primrose. Native of sections 4, 4B, 1, 3, and 5. It is the largest and earliest of the yellow primrose. The flowers sometimes reach a diameter of better than three inches. The plants occur in thick colonies, and in many places during February and March acres of land are bright yellow with this flower. It comes into bloom in the early evening and closes about the middle of the next morning. The plant is best propagated by collecting and planting the seed. Where one has soft soils, this plant is recommended for beds and for roadside work and as a bed plant which finishes its blooming in time to be superseded by other and later blooming plants. Commercial.

*Oenothera serrulata* Nutt. A perennial *Oenothera* growing to a height of ten to fifteen inches, and having wire-like stems bearing throughout the spring numerous light yellow flowers nearly two inches across. In some of the varieties of this plant the inside of the tube is black. Because of the stems, in many places in Texas, this is known as the wire primrose. It is of value for roadside and park work in that it

remains open through the day and blooms through a long period of time. It responds to cultivation and is easily multiplied by root division. Native of all of central Texas.

*Oenothera speciosa* Nutt. Red Primrose or Hartmannia. This beautiful pink or red primrose is well known in all portions of the state. It has many natural varieties. The colors range from pure white to deep red and its size ranges from one-half inch to better than four inches. The plant is a perennial from a woody root stalk. It is best propagated by obtaining root divisions. The plant is too well known to need further description. It should be used as a bed plant wherever landscape work is to be done. Commercial.

*Oenothera triloba* Nutt. An *Oenothera* growing as an annual or a perennial. Native of limestone hills and in lime soils. Produces a few smooth ovate leaves above the ground. In early spring from one to many large yellow primrose flowers are borne. Some of these are four inches across. This large flower that persists for two days is followed by an equally large trilobate dry seed pod. As a plant for a rock garden, or for a bed of curious plants which are ornamental, this plant is recommended. The seed can be obtained almost anywhere there are limestone hills. The pods should be carefully picked and the seed planted in beds. After the young plants have established themselves, they can be transplanted where needed. All that is required for success is soil that has a heavy lime content, protection, and some moisture.

*Stenosiphon linifolius* (Nutt.) Britton. Giant Gaura. A most spectacular plant that is native to sections 7A, 7, 4A, and 4. It is probably an invader from the plains country farther north. The plant much resembles *Gaura* but grows to a height of from six to seven feet and bears on its upper branches long spikes of white *Gaura*-like flowers. This is a wonderful honey plant and its only detriment is the lack of numbers. The plant is extremely spectacular, having flower spikes from eighteen inches to two feet long all in bloom at the same time. The plant requires soft soils with a lime content and protection from livestock. It can be grown from seed. The seed should be planted on the permanent location in October and November. As soon as the plants are up, they should be thinned and cultivated. They will commence vigorous growth about the first of April and should commence to bloom in June, continuing until October. This plant occurs as a native over much of North Central Texas and there, because it is a native, should be used in quantity in roadside plantings. Its height and numerous flowers allow it to take its place where brush and trees form the background.

#### HALORAGIDACEAE

*Myriophyllum*. Water Rope. This genus contains three species that are useful wherever there is a sufficient amount of running or standing

water in the area to be landscaped to warrant the use of water plantings. The feathery foliage is of value to hide muddy pools. All the plants in this species do well in running water.

*Proserpinaca pectinata* Lam. The tall-growing water weed. A species which will grow in any piece of permanent water. During the winter the stems with filiform leaves fill a portion of the pool. In early spring, stems rise above the water forming a mass of light green peculiarly shaped branches on which the small white flowers are borne. This plant has been long used in water plantings and as it is a native in Texas, it should be widely used where new water plantings are to be made.

### ARALIACEAE

*Aralia spinosa* L. Hercules' Club. A plant found native in section 1 but will grow in sections 4A, 4, 4B, 2, 3, and 5. A most peculiar plant which grows as a small tree. The first part of its life, it puts up a strong straight stem to a height of from eighteen to twenty feet seldom over two inches in diameter, but with hard wood and bark similar to any tree. It bears no branches or leaves on this trunk. During this growth period it will bear terminal clusters of large pinnate leaves. Having reached this height each spring the plant bears from two to six pinnately divided leaves sometimes thirty inches in diameter and from the terminal bud, produces an enormous flat topped cluster of small flowers sometimes twenty-four inches in diameter. These clusters are followed by coral red berries. There is no more spectacular plant which is native to Texas. Where moist and shady conditions occur in parks or in yards, a specimen of this plant will be a great addition to the interesting plants. It can be grown by obtaining the young plants in the wild or from the seed.

### UMBELLIFERAE

*Oicuta maculata* L. Wild Parsnip. There is little to recommend the use of this plant which bears the reputation it has for its poisonous root stalks; however for a water planting in marshes or lakes, no matter where located, this is one of the most beautiful of plants. Its fern-like foliage and its numerous white flowers make it well worthy of a place. It can be obtained through root divisions and is most easily grown but it does not run wild and become obnoxious. The Umbellifer family is well represented by a large number of weeds which are common all over Texas. These are called Queen Anne's Lace, Dill, Wild Celery, and Wild Carrots. Among the species named Queen Anne's Lace are the well-known pot-herbs: cummin, coriander, chervil, and others. These plants undoubtedly have come from the yards of the pioneers as they are quite common along all roadsides where early in the spring they are the most beautiful masses of white and pink flowers which extend for miles through river valleys and black land sections. Any or all of these species should be grown according to the desires of the gardener. The seed is easily gathered and should be planted in early winter.

*Eryngium Hookeri* Walp. Native to river valleys and black soils throughout Texas. It is a semi-prostrate plant having stiff cut leaves and bearing through the summer small heads of brilliant purple flowers. Where water stands along roadsides followed by mud flats in the summer and fall, this is the cover that is needed. It will grow in such situations and completely hide the muddy water and mud flats. To the attention of planting and establishing the colony must be added the collecting of the dead stalks each fall, because during dry times in the winter, the plants blow from the growing places and become a nuisance, owing to the hard stiff stems. A desirable plant for preliminary work in massed landscaping.

*Eryngium Leavenworthii* T. and G. Purple Eryngium. A most beautiful plant found through the entire state wherever soft and somewhat moist areas occur. Plants grow to a height of three to four feet. In July and August it bears large heads of purple bracts from which come the small greenish flowers. In addition to these dense clusters of purple bracts larger and leaf-like bracts which are bronze in color occur both above and below the spike. After about a month of blooming the spike loses the purple color and turns green. The seed is ripe about the middle of October when it should be gathered. If scattered immediately in localities similar to where the plant grew, protected from cattle, and thinned in the spring, one can easily reproduce one of the beautiful purple spots that adorn some of the plains of Texas.

*Eryngium yuccifolium* Michx. Button Snake Root. A perennial arising from a tuberous root which is found in sections 4A, 4, 4B, and 1 but will grow in 7, 7A, and probably 3. During most of the year the plant very much resembles a yucca. In May and June it produces a heavy stalk of about three feet high, bearing single long yucca-like leaves and at intervals along the stem. This is topped by an umbel of green flower clusters about an inch in diameter. The plant while a native of wet places will grow wherever it is cultivated and is an addition to any formal garden and also has its place in a rock garden or as a specimen plant in yards. Commercial.

*Hydrocotyle umbellata* L. A peculiar water-loving plant which bears numerous disc-like leaves attached by the centers. It grows in abundance along the edges of lakes, spring holes, and marshes. Because of differing sizes of the disc leaves, this plant is known as Nickels and Dimes by the school children. The plant produces small umbels of yellow-white flowers throughout the summer. This plant is quite desirable for an edge plant along lakes and other water plantings. There are several species of *Hydrocotyle*. The gardener should use the species native in his immediate vicinity.

*Tauschia texana* A. Gray. A member of the parsley family that seemingly has no common name. It is a native of river valleys and marshy land in sections 4B, 1, and 2. It has no stalk above the ground. Through the winter and early spring it bears numerous fern-like leaves which lie flat on the ground and as soon as the first warm days come, it produces



numerous golden yellow clusters of common umbellifer flowers. It is a very desirable species to plant in parks as this plant does its best under the shade of trees. As soon as it blooms it disappears, and is absent until late fall when the new green leaves add color to the winter landscape. The underground root is easily transplanted or the plant can be grown from seed.

## CORNACEAE

*Cornus asperifolia* Michx. Rough Leaf Dogwood. This small growing tree is common in moist situations in sections 7A, 4A, 4, 4B, and 1. The plant is very showy because of the smooth stems of its numerous water sprouts which are dark red. The leaves are borne in large numbers, and are ovate and beautifully veined. In spring it bears clusters of small white flowers. This species can be used to advantage wherever plantings are being made along water fronts or in parks having water areas, and for roadside work as the road approaches the crossing of a stream.

*Cornus florida* L. Flowering Dogwood. A tree too well known to need any recommendation. It is native to sections 4B, 1, and 2, and will probably grow in parts of 7A, 4A, 3, and 5. Because of difficulties encountered in transplanting, it should be purchased from nurseries where only a specimen plant or a few trees are desired. Where large plantings are to be made the seed should be planted in leaf mold in deep shade. In two years the seedlings will be sufficiently large to transplant to the permanent location. As a single tree to be used for yard or park work it is better to procure one that is six or seven years old as the young trees need much shade in order to make strong growth.

*Garrya Lindheimeri* Torr. Silk Tassel Bush. A native of sections 7A, 4A, and 5 and will grow anywhere in the state if planted and given a small amount of protection. Its growth is regulated by moisture and soil. Where the moisture supply is small the plant is a shrub, but where moisture is plentiful, it becomes a tree twenty to thirty feet in height. The leaves are almost coriaceous and covered with considerable wool. In early spring it bears silky white spikes from which the small pink flowers protrude. In fall these spikes are followed by clusters of blue berries. The plant is not common even in its habitat but is sufficiently beautiful to warrant its cultivation. It is most easily obtained by growing from seed.

*Nyssa aquatica* L. Big Tupelo. The water gum of East Texas. Will grow anywhere in sections 4B, 1, and 2 and should be largely used as a roadside tree through those parts. Because of the ease with which young plants can be obtained, the tree should be a favorite and used because of its beauty.

*Nyssa sylvatica* Marsh. Upland Tupelo. This is the common upland gum of East Texas and should be used in yard and park plantings wherever such are being made. The tree always presents a pleasing appearance. It can be obtained easily and will give service for many years.

## ERICACEAE

*Arbutus texana* Buckl. Texas Madrono. A most beautiful and peculiar tree found in sections 4A, 5, and 6, where it occurs only on high rocky uplands and in canyons in mountains. At the eastern end of its range it occurs as a small tree up to three inches in diameter and twelve to fourteen feet in height. In the mountains of West Texas, it often reaches a diameter of two feet and a height of forty to fifty feet. It has smooth red to gray bark, ovate, coriaceous, green leaves, and bears in early spring large clusters of greenish white flowers which are bell shaped. In the fall of the year the trees are covered with red fruits which have a surface resembling the skin of an orange. This is one of the most spectacular trees of Texas and if not cultivated will become extinct because of the inroads of agriculture and ranching. The cattle destroy the stems not so much by grazing as by tramping them from the soil. To obtain specimens one must procure the fruits and grow them in seed shelters. This tree should be made available by some nursery.

*Lyonia ligustrina* (L.) DC. White Alder. Small shrub growing in the damp woods of East Texas which bears through the early summer numerous white bell-shaped flowers which are very attractive. This and its larger relative *Lyonia mariana* (L.) D. Don., which is larger in growth and more extensive in distribution, should be planted wherever moist and shady situations occur in sections 4, 4B, and 1. While the plants are very common in section 6 they will become extinct if not taken into cultivation as they are rapidly disappearing through pasturing and fires.

*Rhododendron canescens* (Michx.) D. Don. Hoary Azalea. A native of sections 1 and 2 but will grow in sections 4A, 4, and 4B. This and *Rhododendron oblongifolium* (Small) Millais, pink azalea, as well as *Rhododendron viscosum* (L.) Torr., white azalea, are similar species, all of which are known as azalea wherever found. They are natives of moist and marshy places but will grow even in many parts of sections 4A, 4, 4B, and probably in 5. These most beautiful plants should be cultivated to save them from extinction. Because of the showiness of the plants when in bloom, few of them remain anywhere near a public road as the first passerby has but one idea, to take it with him, only to find that the flower soon wilts. Wherever one wishes beautiful and rare plants, these three species can be recommended.

*Vaccinium arboreum* Marsh. Tree Huckleberry. A small round-topped tree native to sections 4, 4B, 1, and parts of 3. Its red brown bark, intricate branches, and small ovate leaves make it attractive. In early spring it is covered by numerous white flowers followed in the middle of summer by glossy dark red berries. It is very desirable as a specimen plant in parks and yards, and can be grown from the seed or dug from the wild. Commercial. Several other varieties of blueberries occur in East Texas and one along the Gulf Coast. The berries are not very edible but the plant with its red barked stems and light green leaves makes a very attractive hedge or specimen plant. They can be obtained through nurseries or dug from the wild.

## PLUMBAGINACEAE

*Limonium brasiliense* (Boiss.) Small. Sea Lavender, Statice. A peculiar plant common to the entire water front of the Gulf Coast where it grows in salt flats and salt marshes. It has smooth large palmate leaves which lie flat on the ground. Through the summer and fall, it puts up clusters of numerous tiny purple flowers which are everlasting, the color remaining for months after the flower has become a fruit. This plant is recommended for trial. It is abundant along the seacoast, making it easy to obtain. It has a heavy underground root stalk.

*Plumbago scandens* L. Texas Plumbago. A shrub-like plant growing in section 8 where it is found in deep thickets along the Gulf Coast and the Lower Rio Grande. It will grow under cultivation in parts of 4, 4B, 1, and 2 and should be tried. The plant is confused with the cultivated plumbago; however this flower is white, only one-half inch across and borne on a long stem which is peculiarly colored, making the cluster quite attractive. The plant is evergreen and bears flowers throughout the year. It can be obtained through root divisions or grown from seed.

## PRIMULACEAE

*Dodocatheon Meadia* L. Shooting Star. A rare plant in sections 4A, 4, 4B, 2 and in one place in section 5. It grows in moist and shady locations where a continual supply of seep water is available. The plant has a heavy underground root stalk. In winter it puts out a rosette of spatulate green leaves about six inches long which have red midribs. In early spring it sends up numerous straight stems to a height of ten to twelve inches. The stalks are red and produce from the top eight to ten very peculiar red flowers. This is one of the most beautiful of the native flowering plants. It should be very widely grown wherever opportunities are offered. It will grow and do well if one gives it some cultivation and considerable water in early spring. It has been grown on the black land prairies of section 4 where the only care it receives is that commonly given to garden plants, and is planted on the north side of the house. In early spring it needs considerably more water than the other plants and rewards the gardener by numerous blooms. This plant can be purchased from many florists.

*Hottonia inflata* Ell. American Feather Foil. Probably the most peculiar flowering plant in Texas. It consists of a number of hollow stems which float on the surface of pools. The leaves, too, are inflated and can hardly be recognized as the same as the leaves of other plants. In summer it bears small inconspicuous flowers. It is an addition to any water garden or lily pool, and has a place in mass water planting along the edges of lakes. Native of sections 4B, 1, and 2 and will grow anywhere that it is given sufficient water.

*Samolus alyssoides* Heller. This is a wide-leaved plant which grows in the edge of the salt water on the Gulf Coast. Throughout the summer it bears delicate spikes of white and pink bell-shaped flowers. It is

adapted to landscape work where there is salt in the soils. It should be used along the Gulf Coast where native plants are to be used around hotels and summer resorts.

*Samolus cuneatus* Small. A very delicate plant found only where much moisture and shade occur. Found through sections 4A, 4, 4B, 1, and parts of 3 and 5. For park work where fountains or water fronts occur, this plant should be used in connection with maiden hair ferns as they flourish under similar conditions. The *Samolus* has cuneate green leaves which lie flat on the ground. Through the summer it produces spikes of very small white flowers. It can be obtained easily as seedling plants in the wild. After these have become established, the plant will take care of itself.

### SAPOTACEAE

*Bumelia Schottii* Britton. Ironwood. A small round-topped tree native to section 3 but will grow in 4, 4B, and 5. The tree is evergreen, being covered with shiny coriaceous leaves, oval, and about three-fourths of an inch long. The tree is peculiar in that it bears clusters of green-colored flowers about one-fourth of an inch across through November to January. These are followed by blue plum-like fruits about three-fourths of an inch long which are ripened in April and May. Because of its dense dark green foliage, its small size, and peculiarity of flowers and fruits, it should be much utilized through the sections in which it will grow. It is very probable that this plant has possibilities as a fruit tree and as a source of chicle. The Mexicans in section 3 call it chicle and obtain that substance from the tree by bleeding, which occurs when the fruits are picked green. The plant can be grown from seed. There are eight other species of *Bumelia* native to the state of Texas. None of them occurs in pure stand and all are worthy of being grown as specimen plants. As a rule they are a smooth tree with dark green leaves and brown bark. These trees should be made available for planting by nurseries.

### EBENACEAE

*Diospyros texana* Scheele. Black or Mexican Persimmon. Native of sections 4A, 4, 4B, 3, 5, and 6. Small slow-growing tree with spatulate leaves, dark green, and covered with wool. The bark of the tree is green in youth and white in old age. In spring the tree produces numerous yellow bell-shaped flowers which make this plant one of the best early honey plants. These flowers are followed in the middle of summer by black fruits about three-fourths of an inch in diameter which are filled with sweet pulp and brown seeds. The fruits are relished by all wild animals and eaten to considerable extent locally. The objection to the fruit is that it stains the skin a sooty black, which persists for several days. The plant received the name of Capote as the Mexican women use the ripe persimmon in making a hair dye. The tree is easily grown from seed and makes a good addition to a collection of trees and is adaptable to roadside work through section 8.



*Diospyros virginiana* L. Eastern Persimmon. A plant too well known to need comment. Native to sections 4B, 1, and 2 and will grow in 7A, 4A, 4, 3, and 5. It is a beautiful tree and the fruits are somewhat desirable. A good tree for shade especially for roadside planting in sections 7A, 4A, 3 and 4.

### STYRACACEAE

*Halesia diptera* Ellis. This is the Silver Bell or Snow-drop trees of the Gulf Coast. It will, however, grow in sections 4, 4B, 1, and 3 and should be tried. It is a beautiful tree and can be obtained from nurseries.

*Styrax americana* Lam. The large Silver Bell Tree. Native to sections 4B, 1, and 2 and is growing in cultivation in parts of 4 and 3. Like the small silver bell tree, it can be had in all of its varieties from nurseries. It should be planted in the sections recommended.

### OLEACEAE

*Chionanthus virginica* L. White Fringe Tree. Native of sections 4B, 1, and 2. A beautiful tree resembling ash, reaching a height of ten to fifteen feet. In early spring this tree appears to be covered with a mass of small white streamers, which are the slender petals of its numerous flowers. As an attractive specimen tree or a small tree for a yard there can be no better one chosen. It is recommended for trial in sections 4A, 4, 3, and 5. Commercial.

*Forestiera pubescens* Nutt. Elbow Bush. A peculiar shrub having a long recurved stem which bears branches at right angles. Wherever a branch touches the ground it takes root. The total height of the bush is seldom more than a few feet. It is covered throughout the summer with numerous leaves. This makes an ideal shelter for wild animals; hence the names turkey-shed and wolf-shed given this bush. This species is one of the earliest plants to bloom in the spring. The staminate bushes often are brilliant yellow with the masses of stamens which are produced in the axils of the leaf scars. This bush makes a fine erosion control plant. It is also good for hedges, and where one is planting cover for birds, no better plant exists. It can be grown from cuttings or from seed. There are seven other species in the state; however, they are so similar in their looks and habits that they are much confused. All of them have the same characteristics and the same cultural value.

*Fraxinus americana* L. White Ash. A well-known tree native in sections 4B and 1. The tree is grown in cultivation through the whole of Texas. It is available from nurseries and is a shade tree with a pleasing appearance.

*Fraxinus caroliniana* Mill. Water Ash. A low-growing ash common to damp localities. Where an ash tree is needed that can stand much moisture, this one should be chosen. It is not very different from the other species of the genus with the exception of very large seed pods. Commercial.

*Fraxinus pennsylvanica* Marsh, var. *lanceolata* (Buckl.) Sarg. Green Ash. The native ash of sections 3, 4, and 5. Common in cultivation as a yard plant and should be still more largely used. Commercial. Of the six remaining species in the state all should be used in order to increase the numbers of this genus which is perhaps the most choice of shade trees.

*Ligustrum ovalifolium* L. California Privet. One of the ligustrums so commonly used in yard work throughout the whole of Texas. This and *Ligustrum vulgare* L., the European form, in many places become native in this state. However where they are not cared for, they soon lose their trim and well-shaped appearance and are very similar to some of the native yaupons.

*Menodora heterophylla* Moric. Red Bud. This name should not be used for this plant; however it is used very widely and is in a country where the red bud of literature (*Cercis* sp.) does not exist; therefore it is thought best to use this common name. The plant has an underground perennial root stalk. In the late fall it puts up a number of shrub-like stems to a height of about six or eight inches. These bear in earliest spring numerous yellow flowers. The outside of the flower is deep red and as the flowers remain in bud for a month or so it is easy to see why the name is so well known and widespread. The flowers are trumpet-shaped and about three-fourths of an inch across. Should the plant be frosted it will put out a second set of stems and flowers. In a month after the plant has bloomed, the seeds have ripened and fallen, and the plant disappears until the next winter. This plant should be hunted out in the spring, either marked or dug at once, and transferred to parks or yards where it makes a most excellent permanent bed plant or border plant.

### LOGANIACEAE

*Buddleia*. A general of shrubs represented in Texas by *B. Lindleyana* Fort., *B. marrubifolia* Benth., *B. racemosa* Torr., *B. racemosa* var. *incana* Torr., *B. scordioides* H. B. K. These are low shrubs generally growing in the southwestern part of Texas. They are peculiar in that they can stand almost any amount of drought and heat. The flowers which are very small are surrounded by a woolly growth which gives the plant a most unique and pleasing appearance. Few trials have been made in the cultivation of this genus but *B. scordioides* is recommended for trial by those who wish a plant that will grow under conditions of great heat, drought, and poor soil.

*Gelsemium sempervirens* (L.) Ait. Yellow Jasmine. A prostrate or vine-like shrub with bright green bark and small dark green leaves, and bearing through the spring and summer numerous yellow trumpet-shaped flowers. A plant which is well known in cultivation and has been widely distributed through horticulturists. Native of sections 4B, 1, and 2 but will grow anywhere that it is planted and receives attention. A nice specimen plant or a background for smaller and more brightly colored flowers.

*Spigelia marylandica* L. Indian Pink. A very beautiful tall-growing plant found in the swampy parts of sections 4B, 1, and 2. Throughout the summer it bears spikes of tall red tubular flowers two inches or more in length. This plant, which is a perennial, has long been in cultivation in the southeastern states. Where a tall showy plant is needed it is a favorite plant. Commercial.

#### GENTIANACEAE

*Eustoma Russellianum* (Hook.) Griseb. Prairie Gentian. This plant occurs in three very distinct forms in the state of Texas. Along the sea beaches and islands, the plant grows upright to a height of about fourteen inches, has numerous opposite ovate leaves, and bears a cluster of pale blue flowers about one and one-half inches in diameter. Towards the center of the flower the color is pale yellow to white. This variety blooms through the entire summer. The second variety, commonly known in its locality as Texas Blue Bell, grows to a height of at least two feet with a few ovate lanceolate leaves, and bears numerous deep purple flowers nearly three inches across. This plant grows in large numbers sometimes covering many acres. In certain seep places in sections 4, 4B, 1, and 2, this plant has very largely become commercial as it is gathered in the wild by the carload and transported to large cities for sale, the ordinary blooming time being from the middle of July to the middle of August. A third variety of shorter stature and bearing from one to three dark purple flowers about two inches in diameter is not uncommon in sections 7A and 7. All of the plants are winter annuals and prefer the same character of environment, seepy flat ground with some salt content. This requirement makes it difficult to grow these plants. It would, however, be profitable to grow the larger flowers and attempt to make them a seasonal article of commerce.

*Fraseria speciosa* Dougl. Pyramid Flower. A very showy biennial plant native to Trans-Pecos Texas. The plant must grow in shady moist conditions. The first year it presents a large rosette of lanceolate leaves, sometimes as many as fifty, with the rosette having a diameter of two feet. The second year in the middle of summer it puts up a stalk to a height of five to seven feet. The flowering stalk bears but a few leaves, which are lanceolate, and is topped by a large spike of peculiar four-petaled yellowish white flowers. The petals are unique in that in the center of each petal is a chocolate brown gland which makes the flower very conspicuous. The flower cluster blooms through a period of three to four weeks, after which the upright seed capsules make the spikes very attractive. After two or three months the dead plant should be removed. The seeds are very small but in seed shelters easily propagated. The seedlings should be removed from shelters early in the spring so that they may become well established the first year. This plant will undoubtedly grow in the northern parts of section 7, 7A, 4A, and 4 and can be grown anywhere that moisture and shade occur in quantity.

*Gentiana Saponaria* L. Swamp Gentian. A typical blue flowered gentian from a perennial root stalk, growing to the height of one to two feet and from August to September, and producing numerous blue flowers. It is

known only from section 1 but probably occurs in section 4B. It can be grown anywhere that moisture and shade, accompanied by care, exist. Commercial.

*Nymphoides aquaticum* (Walt.) Kuntze. Floating Heart. A very peculiar water plant which consists of a heart-shaped leaf sometimes six inches across. On the stem just below this leaf-like body are produced from one to a dozen white five-petaled flowers from three-fourths to almost an inch in length. This plant has been reported from the lakes and swamps of section 1 and doubtless occurs in 4B and 2. As it is a common plant with floriculturists it is found in lily pools and goldfish pools throughout the state. Commercial.

*Sabatia angularis* (L.) Pursh. Rose Pink. The well known Rose or Prairie Pink of East Texas, a plant growing to a height of from two to three feet, having a four-angled stem and opposite leaves. The flowers are from one inch to one and one-half inches wide and rose pink with a star in the center. The plant is annual or perennial and is very erratic in its growth, probably on account of selective moisture requirements. It produces an abundance of seed, yet it is only on certain years with these sometimes separated by long periods, that the plant is common. Where one collects the seed as soon as it is ripe in the middle of summer, plants it immediately in soil similarly located and moistened as that in which the original plant grew, and takes good care of the seedlings, a bloom can be had each year. The plant is adapted to soft soils where moisture is common. It does its best in the open sun. Commercial.

*Sabatia campestris* Nutt. A plant very similar to the last and confused by most people with it, as are the following species: *Sabatia calycina* (Lam.) Heller; *Sabatia carnosa* Small; *Sabatia gentianoides* Ell.; *Sabatia gracilis* (Michx.) Salisb.; *Sabatia stellaris* Pursh. These species are so similar that only by close examination can they be distinguished. As they generally grow in isolated sections and do not overlap their territories, they pass easily for the same species. All of them have the same habits, can be grown with the same care, and should become popular as bedding plants.

## APOCYNACEAE

*Amsonia ciliata* Walt. var. *texana* (A. Gray) Coulter. Blue Texas Star. Found in sections 7, 7A, 4A, 4, 4B, 5, and in many places in 3. An annual herb forming a heavy perennial root cluster bearing numerous lanceolate leaves, the seedlings growing to a height of eighteen inches to three feet and bearing throughout the summer clusters of blue five-pointed flowers, each one of which is about one-half inch across. This species will grow anywhere that it is planted and given attention. It needs soft rich soil and a great amount of moisture. It grows in the open sun or in some shade. It is a fine addition to permanent plantings in any yard or park. A suggestion is here made that a collection of the various plants named Texas Star, but which must be preceded by an adjective giving the color, would make a fine bed in any small park or large yard.



*Amsonia Tabernaemontana* Walt., var. *salicifolia* (Pursh) Woodson. A species known to sections 1 and 2; found in certain places in 4, 4B, and 3. The plant very much resembles the last but grows in swampy places and to a height of four to five feet. The flowering clusters are much larger and contain numerous small flowers. This plant should be used in all water plantings and in moist shady places wherever these occur. It is a welcome addition to any water planting.

*Apocynum cannabinum* L. Dogbane. A species in this family so closely resembling the milkweeds that anyone can see the relationship. A tall growing herb aboveground with heavy perennial roots. The leaves are smooth and a peculiar yellow green. In summer and fall, clusters of small pink bell-shaped flowers are produced in small umbels near the top of the stems. These are followed by seed pods about one-fourth of an inch by three inches with two pods in a place. This species is widespread throughout Texas and will grow anywhere that it may be planted. As a specimen plant in a collection or in a group of tall-growing plantings in parks, this has a place.

*Macrosiphonia macrosiphon* (Torr.) Heller. Found in sections 3, 5, and 6. A perennial plant which much resembles a milkweed in form and a dogbane in fruit, but bears flowers which are very showy. These white tubular flowers are from three to four inches long; the lip five-lobed and flowers occurring in the axils of the upper leaves. The plant is perennial aboveground in most places where it occurs. Because of the large flowers and rarity of the plant, it is little known; however if it is made available to the public, it will become a favorite of those desiring a beautiful and hardy ornamental.

*Nerium oleander* L. Oleander. A beautiful ornamental too well known to need description. For sale in all of its varieties by all dealers and a plant that in parts of sections 4B, 1, 2, and 3 has gone wild. In some places are found thickets of a peculiar variety which was introduced years ago. Commercial.

*Vinca minor* L. Periwinkle. As the three species of periwinkle—*Vinca minor* L., *Vinca rosea* L., *Vinca major* L., are all well known in cultivation and as all of them have become wild in Texas this species needs no recommendation. It is one of the plants on which those who wish showy ornamentals with the least amount of trouble can depend. In the greater part of South Texas after this is once planted, it will take care of itself.

#### ASCLEPIADACEAE

*Acerates auriculata* Engelm. Green Milkweed. This plant is a native of most of Texas, and where this species is not present *A. floridana* (Lam.) Hitchc. takes its place. The plant is perennial, arising from a long underground root stalk. The aboveground part consists of a slender stem about eight to ten inches in length bearing numerous umbels of small yellow green milkweed flowers in the axils of the linear leaves. Under cultivation these stems are produced in large clusters, and a group of

these plants is a very pleasing and curious sight. They are easily transplanted by root division or grown from seed. This genus has a number of species which are not here discussed that are so similar to the one given that what is said of one applies to all. These species are adapted to rock gardens.

*Asclepias amplexicaulis* J. E. Smith. Blunt Leaf Milkweed. Found in sandy soils in wooded sections. Like all of this genus the plants come from heavy underground root stalks. The stems are large, stiff, and bear lanceolate leaves. The flowers are borne in clusters on the upper parts of the stem. These clusters bear from few to many flowers which are peculiarly constructed, and differ from all others in that they consist of small greenish white flowers borne on stalks at least one inch long, giving the flower cluster a most peculiar appearance. This plant has been brought into cultivation in parts of East Texas and as a low plant growing in a garden is very showy. For park work, a group planting of the various milkweeds is very attractive both in summer and fall as the large seed pods are of pleasing appearance.

*Asclepias latifolia* (Torr.) Raf. This is a large green milkweed found in every section of Texas. It bears a cluster of pink flowers almost three inches in diameter which are followed by large pods filled by the silky umbrellas which carry the seed. It is a plant that should become a member of collections in parks and yards.

*Asclepias incarnata* L. Swamp milkweed. A species growing to the height of five to seven feet and having the peculiarity of growing in standing water. The leaves are lanceolate, dark green, and long. In the fall of the year it bears large numbers of scarlet flowers making a most notable addition to any water planting. This plant will also grow in moist soils and thus can be raised in yards and parks where moist conditions are available. The plant can be grown from root divisions or from seed.

*Asclepias nummularia* Torr. Money Milkweed. The most peculiar and best looking of all of the genus. It is native of the mountains of Trans-Pecos Texas. Like others of the genus it grows from an underground root stalk making it possible to transplant easily. Aboveground the plant consists of two, and in some specimens, four very thick light green leaves; arising from the axils of these leaves are generally two clusters of typical milkweed flowers from white to pink in color, the entire cluster being about three-fourths of an inch in diameter. This is one plant that should be grown in every rock garden and collection of rare plants. Some nursery should make this species available to the public.

*Asclepiodora decumbens* (Nutt.) A. Gray. Antelope Horns. This species is probably one of the best known plants in the state, in early spring a heavy stem bearing lanceolate stalks growing to a height of eight to ten inches. It produces a large ball of light green flowers. These balls sometimes are at least four inches in diameter. In turn these flowers give way from one to several peculiarly shaped pods which when green

much resemble the horns of the Texas antelope. As this plant will grow for years, is easily transplanted, and produces beautiful flower and fruit, it should be grown as a part of any collection of milkweeds in a rock garden, or park planting.

*Asclepiodora viridis* (Walt.) A. Gray. This plant is so different from its relative that it is given, with the suggestion that it be planted in the same vicinity to show the differences between the species. This plant has a slender stem rising to a height of two feet. It bears numerous almost oval leaves, which are dark green with red midribs. At the top it bears a few umbels of reddish color. These clusters are not over one and one-half inches in diameter. They are followed by long, curved milkweed pods. The plant has a peculiar appearance and when grown with other milkweeds makes a nice addition to a collection.

*Gonolobus laevis* Michx. The most common vine milkweed in Texas, found wherever moisture is available. The vines are extremely long. They have nodes two feet apart where they produce lanceolate leaves up to three inches in length. The axils of the upper leaves produce large numbers of small clusters of white flowers. The vine is a honey plant of note. It is also of value in erosion control as it will grow on a newly eroding bank and will tie sandy soils together with a mat of roots that will withstand considerable water current. The large seed pods make it attractive throughout the summer.

*Vincetoxicum biflorum* (Raf.) Heller. Star Milkweed. This plant has underground root stalks and is perennial. The plant aboveground consists of numerous short branches. These bear opposite, lanceolate leaves in the axils of which are borne two to several star-shaped yellow black flowers. These in turn are followed by pods resembling the others of the milkweed family. This plant is peculiarly adapted for a rock garden, collection of desert plants, or bed work in yards and parks. There are seven other species in this genus which range from this low-growing one to the longest of vines belonging to the milkweed group. All species have the common five-lobed dark colored flowers with the white colored knob in the center, which gives to this group the common name of pearl milkweed.

## CONVOLVULACEAE

*Convolvulus hermannioides* Gray. Red-centered Vine Morning-glory. The leaves are three cornered and longer than broad. The morning-glory flowers are about one inch in diameter and five sided. When the flowers first open they are pure white but after pollination they turn red within the tubes. As this plant is a perennial and of slow growth, it does not produce a seed as do most of the morning-glories. This plant when properly cared for will produce numerous white and red flowers throughout the dry parts of summer, and has its place in every large park planting and especially along the roadsides where the ground is full of rocks and where clay exists.

*Cuscuta Cephalanthi* Engelm. Buttonwood Dodder. A selective member of the dodder group. The plant attacked bears numerous rope-like clusters of yellow to white flowers which are not unattractive. It seldom injures its host but is unsightly in the winter. This parasite is annual, thus saving it from death by the parasite. Because the plant is little known and is very attractive these parasites are of interest in park work. To obtain them the matured plants should be procured in the fall and should be scattered on the ground under the plant they are to attack the following season.

*Cuscuta indecora* Choisy. Prairie Dodder. This is typical of the dodder group which are all definite parasites. They start life as an annual plant; however as soon as the stems which contain no chlorophyll touch the host plant they become attached and henceforth are typical parasites. Among many species some are very detrimental. The one that attacks clovers is one of the most injurious of the weeds of Europe. It was introduced in the United States and is a pest in some sections. The plant is a curiosity and is little known. In some sections the huge masses of yellow stems before they become attached to the host are spoken of as love vines. Most of the species are selective and live on but one species or one genus of hosts. The plant is ornamental and will pay anyone interested in producing attractive collections of wild plants to secure in the fall the fruiting specimens of this parasite and immediately sow them in the park under the plant where the parasite is desired the next year.

*Dichondra repens* Forst., var. *carolinensis* (Michx.) Choisy. Moneywort. A plant well known to everyone, but few know the common name. The plant will be noticed early in the spring in lawns or around buildings where it appears as paired oval leaves lying flat on the surface of the soils. The vine and branches are underground. This plant in places becomes so numerous as to make unsightly places in closely mown lawns. It, however, is a very valuable plant to landscape gardeners. It will form a green mat of leaves with which to cover vacant areas along the north sides of houses and other places where no other plants will grow because of dense shade and moisture. In the open this plant is ideal for a soil binder and should be used for that purpose. Where it is to be used in large quantity, vines should be dug and replanted on a seed bed. In the course of a few weeks the entire bed will be covered by new plants which can be cut up in short pieces and replaced where the sand or soil binder is needed. The plant is extremely hardy and is native to all of Texas.

*Evolvulus sericeus* Swartz. A small hardy plant perennial underground and bearing numerous short vine-like stems with many silver gray linear leaves. The plant through the summer bears numerous small morning-glory like white flowers. The plant can withstand any amount of heat and drought when once established. This is a fine border or bed plant for a yard. There are several other species of this genus. One has blue flowers instead of white, these flowers being only one-fourth of an inch in diameter. This species should be sought out and grown because of the daintiness of the small blue flowers which somewhat resemble flax. This genus can be found in dry soils in all of Texas south of San Angelo and will grow anywhere within the state where planted.



*Ipomoea crassicaulis* (Benth.) Robinson. The Tall Bush Morning-glory. A plant which under the name of *Ipomoea fistulosa* is said to have been imported from Brazil. It has gone wild over most of the state and will grow anywhere planted. South of San Antonio it becomes a perennial aboveground but farther north it is annual aboveground. It makes a vigorous growth and reaches a height of six to eight feet. It is dark green in color and bears very numerous pale pink morning-glory flowers. Where all of the old wood is removed every spring, this plant makes a very fine ornamental. It can be used as a hedge, specimen plant, or roadside plantings to maintain a background for mile posts or other markers. It is most easily grown from the numerous large seeds.

*Ipomoea leptophylla* Torr. Bush Morning-glory north and west of Austin. This is a small herbaceous bush coming from a perennial underground tuber. The branches which are more or less prostrate reach a length of three to four feet. The leaves are lanceolate. The plant bears throughout the summer and fall numerous bright pink morning-glory flowers about two inches in diameter. This plant should receive the attention of those making park and roadside plantings as it is easily transplanted and will stand up under all weather and will require but little attention. The plant has requirements of a yard beautifier. Many nurseries give this plant in their catalogues.

*Ipomoea Lindheimeri* A. Gray. Perennial blue morning-glory found in sections 5 and 6 and to some extent through the state wherever its tuberous roots are planted. The parts aboveground are annual and are typical morning-glory vines and leaves. These vines grow to a height of fifteen to twenty feet and are sufficiently numerous to cover a large area. The flowers are bright blue and have the ability to remain open through the greater part of the day. This is a morning-glory that should be very widely cultivated because of the fact that it is perennial.

*Ipomoea Pes-Caprae* (L.) Sweet. Goat Foot Morning-glory. A perennial plant found along the Lower Gulf Coast. The vine aboveground is short, curiously branched, and succulent. The leaves are dark green and of such a shape as to give the name of goat foot to this plant. The flowers are deep red and are borne sparingly along the stems throughout the year. This plant is widely grown in window boxes or hanging baskets as it seems to be able to adapt itself to growing indoors; however away from the seashore the vine will repay for its cultivation. When grown in the open the plant very often blooms just before coming of cold weather. It can be procured as a tuber or grown from seed.

*Ipomoea Quamoclit* L. Annual Ipomoea. It is an introduced plant and is the most beautiful of the red morning-glories in cultivation. It does well throughout the state and becomes a weed in the river valleys of the southeastern portion. The plant is a favorite with florists as is attested by the fact that this plant is advertised in all seed catalogues.

*Jacquemontia tamnifolia* (L.) Griseb. The Clustered Blue Morning-glory. An annual morning-glory like plant which has the common morning-glory vines and leaves but bears numerous morning-glory like flowers in heads. In certain strains these flowers are at least one inch across.

The plant has long been in cultivation and is an escape in Texas. It will please anyone who wishes a peculiar vine with blue flowers. It is adapted to covering large surfaces where uneven ground or other unsightly areas are to be landscaped. Commercial.

*Operculina dissecta* (Jacq.) House. Alamo Vine. A tall-growing vine from a perennial root stalk, the leaves of which are divided into five to seven lobes, the edges of the lobes being waved. The plant bears a white morning-glory like flower about one inch across and has large green sepals which are much longer than the flower. The flower is followed by the largest seed capsules of this family, these containing from five to ten black seed. The plant is very easily grown either from seed or from the tuberous root. The vines from San Antonio south are perennial aboveground but north of there they are annual. It is found growing throughout all of section 3 and because it covers much of the walls of the Alamo it has received this name and the seed have been distributed from the Alamo.

#### POLEMONIACEAE

*Gilia incisa* Benth. False Flax. Pheasant's Eye. A very common but almost unknown plant. It is a winter annual which has wirelike stems, grows to a height of eight to fifteen inches and has small pointed leaves that are stiff and hard. The upper parts of the plant bear numerous fine branches which bear on their tips blue five-pointed flowers with light-colored centers, the flowers being about one-third of an inch across. This plant very much resembles a miniature flax. It does not produce many flowers at a time but continues to bloom throughout the summer. It is to be looked for in any shady, damp location especially in rough lands or on rocky hillsides. The ripe seed pods should be collected and sown sparsely in beds where there will be some shade. The plant will amply repay for the trouble of securing and growing it. It is found abundantly in sections 7A, 4A, 4, 4B, 3, 5, and 6 and will grow anywhere. This miniature plant should be in every rock garden or rare flower collection.

*Gilia longiflora* (Torr.) Don. The annual white flowered *Gilia*. A tall *Gilia* native to the sand hills of sections 7, 7A, 5, 4A, and 6 and will grow anywhere planted where there is soft soil and moisture. The plant is almost tree-like in its form, reaching a height of from three to five feet and bears at the top numerous long-tubed white flowers, some of these tubes being more than two inches in length. The flowers are followed by dry seed capsules which make the collection of seed an easy matter. This plant should be grown by anyone who has soft soils and moisture. Those seeking this plant should visit, from June on, the shinnery oak and sand dune localities anywhere west of Brownwood where they are sure to find the plant.

*Gilia rigidula* Benth. A plant common to all of Texas west of San Antonio. It is a perennial that grows as a small shrub with dark green linear leaves, the entire plant being about six inches in height. In early spring it bears large numbers of bright blue five-pointed flowers with

yellow centers. Throughout the summers a few of these flowers are always present. The plant can be transplanted easily because of its compact root system and can be grown from the seed; however it requires two years from seed to the flowers. The plant is to be looked for in any section where the plant has been protected from cattle by brush or rough lands. This will make a beautiful row plant as it is persistent, produces attractive flowers, and is of low growth.

*Gilia rubra* (L.) Heller. Red Gilia. A plant common to sections 7A, 4A, 4, 4B, parts of 3 and 5. The plant is a biennial and through dry periods may remain as a rosette through a period of five to six years before it has stored sufficient food to bloom. The seed should be sown, as soon as the capsules are ripe, on the land where the flowers are to bloom. Throughout the late summer and following winter, a large rosette of very finely divided leaves will be developed. If there is sufficient moisture in early spring, a tall spike well covered with finely cut leaves will arise from the rosette, which will produce through a period of four to five weeks a wealth of bright red star-shaped flowers having a tube about one and one-half inches long. This plant is very showy and is easy to cultivate. It has been in cultivation for many years and warrants all the care given it. The seed can be purchased anywhere.

There are twelve other species of *Gilia* occurring in the state of Texas, all more or less showy. In the sand dunes of section 1 several *Gilias* bearing very showy blue flowers occur. Those wishing a new plant for ornament which will give perfect satisfaction should collect the seeds of the *Gilias* for trial.

*Phlox divaricata* L. Wild Blue Phlox or Sweet William. This is the Sweet William of American literature. It is found in sections 4B and 1 and will grow under cultivation anywhere that it has soft soils and some moisture. If grown in partial shade the flowers are inclined to be light colored, often pure white. The same plant, however, in the full sun produces a cluster of dark blue five-lobed flowers. The plant comes from a heavy root cluster and is easily transplanted from the wild but is just as easily grown from the numerous seed capsules which are ripe about the beginning of summer. This is a plant that should be in any garden where one specializes in small showy flowers.

*Phlox Drummondii* Hook. The most noted Phlox in the world. This plant came to the attention of Drummond, a botanical explorer, in 1834. He obtained seed in Bexar, Wilson, Gonzales, and several other counties where this plant is native. The seed was taken to England and from this start came the majority of cultivated varieties of *Phlox Drummondii*. It is known by its early blooming period and bright red flowers. The seed can either be gathered in the wild or can be purchased, and will grow anywhere in Texas.

*Phlox glaberrima* L. The Smooth Pink Phlox. This species like *divaricata* represents the southwestern outpost of this plant. It is a typical tall-growing phlox reaching a height of twenty to thirty inches, its heavy stem bearing but one cluster of flowers and numerous opposite lanceolate

leaves. The flower cluster is flat topped. The flowers are borne close together, are pink in color, and have a peculiar porcelain-like surface. This plant has been extensively used in the North as a bed plant and for backgrounds. It blooms later than most of the species of this genus, and a cluster of plants bear flowers through a period of at least two months. Because of the rarity of the plant in Texas, seed or roots should be purchased from dealers. It will grow in sections 4A, 4, 4B, and 1 and probably in 7, 3, and 5.

*Phlox pilosa* L. Prairie Phlox. Common in sections 1, 4A, 4, 4B, and 6, and in some parts of 7A, 3, and 5. The growth habit of this plant is very similar to that of *Phlox Drummondii*; however the flowers are larger and lighter in color. The plant is annual and produces a large amount of seed, making it excellent for roadside work. It is working westward along highways where the State Road Commission is making possible the increase of wild plants. This phlox should be used in gardens and park work as it blooms later than *Phlox Drummondii* and prolongs the season in which pink to red flowers predominate.

Eight other species of *Phlox* are common and occur in Texas. All of them are worthy of being brought into cultivation as all of the flowers are showy, the seed easily obtained, and the plants easily grown. They perpetuate themselves if the ground is kept reasonably soft where they are growing.

### HYDROPHYLLACEAE

*Hydrolea ovata* Nutt. A low-growing shrub, perennial in the southeastern part of Texas and annual aboveground in the northeastern part. It grows in shallow water or muddy places. It reaches a height of fifteen to twenty inches above the water or soil and bears through the summer light blue flowers some of which are one inch in diameter. It is armed with spines in the axils of the lower leaves. The leaves are light green and abundant. This is the only shrub which can be used in water plantings that will maintain itself without care and will for years give a wealth of light green and blue throughout the summer to the water's edge. It is well worthy of cultivation everywhere that water and muddy places are available. Commercial.

### BORAGINACEAE

*Coldenia canescens* DC. A low-growing perennial plant which has no common name. It grows throughout sections 7, 7A, 4A, 4, 3, 5, and 6 and is probably the most valuable native plant in that section in the control of sheet and wind erosion. In many places in the semi-arid parts of Texas, this plant covers many acres of land, saving the soil from the wind. Cattle browse on it to some extent but tramping does not seem to injure it. It bears at certain times very small white flowers hidden in the axils of the leaves. This plant will make an excellent border or a solid mat of cover for yards, road work, or park work in the sections



of Texas where it is native. Under cultivation it grows stalky and is a good border plant growing to a height of eighteen inches. This is a species that should be widely planted in sections where wind and sheet erosion are rapidly destroying the range.

*Cordia Boisseri* DC. Texas Wild Olive. A low-growing tree of the Lower Rio Grande Valley. It will grow under favorable circumstances on the Gulf Coast. It is a most beautiful tree because of its large velvety leaves, its clusters of white and yellow flowers, and ivory white fruits. This tree must be taken under man's protection, else it will soon be extinct. Nurseries should make it available and should recommend its use in all of the territory in which dealers prove that it can be grown.

*Ehretia anacua* (Berl.) Johnston. A very desirable tree native to section 3 but will grow in parts of 4, 4B, 1, 2, 5, and probably 4A and 6. In the southern part of its range, this tree attains a height of some thirty feet and a diameter of two feet. It is almost evergreen. The leaves are coriaceous and very rough. The bloom consists of clusters of small white flowers which appear in March and April. These are followed in June and July by large groups of red fruits about one-third of an inch in diameter. While the fruits are mainly filled by very large seeds, the pulp has a very pleasing taste. The fruits are favorites with birds and children. This tree has a number of valuable characteristics. In the section where it will grow, it is one of the most valuable plants to aid in the arrest of erosion in large gulleys, as this tree has a habit of putting out numerous water sprouts and building what is known as a motte formation. When the tree has been established, it is next to impossible to eradicate it. It is not subject to disease and in addition to being valuable in erosion control, it is one of the few plants that will make considerable growth, endure the semi-desert sun, and furnish shade throughout much of the territory where it is native. This tree is highly recommended for roadside and yard plantings. Many years ago this tree was planted quite largely through towns in sections 4, 4B, 2, and 3. Some of these trees almost one hundred years old are still in healthy condition and are the most beautiful trees in the town in which they exist. Water sprouts of this plant can be obtained very easily wherever the plants are native and as they transplant easily the plant is ideal for the grower who wishes a new tree that will be of use.

*Heliotropium confertifolium* Torr. A small gray green perennial which is very common in sections 7A, 4A, 4, 3, and 5. It is also found in 7, 4B, and 6. It is a low-growing plant and produces wire-like stems about four inches in length. These are covered by silver gray scale-like leaves giving the plants the appearance of something artificial. In early spring it bears numerous small white flowers hidden in the axils of the scales. As the plant grows in great masses, it appears as a large gray moss. The plant has great possibilities for use in borders and for mass plantings where a silver gray color is desired. This plant is of value in the

control of sheet and wind erosion. For that reason this plant should be scattered by those interested in protecting their range. The plant so far as known has no common name. It is easily transplanted from the wild.

*Heliotropium convolvulaceum* A. Gray. Found in sections 7, 7A, 4A, 4, 4B, 3, 5, and 6 and will probably grow anywhere planted. This is known in some places as the woolly heliotrope. In many places from June to September it occurs in large patches where the low-growing dark green plants completely cover the surface of ground and bear numerous white morning-glory like flowers about one-half inch across. This is one of the most showy plants in all of the plains country of Texas. It arises from a perennial root stalk and can be easily transplanted. Likewise it can be easily grown from the seed that can be obtained in quantity from any colony of this plant. It is highly recommended for roadside, park, and yard work where a maximum of beauty and service is desired with a minimum of exertion.

*Heliotropium curassavicum* L. Seaside or Salt Flat Heliotrope. A very peculiar fleshy, large perennial which bears clusters of small flowers that uncoil as they bloom. It is generally found along the Gulf Coast but is found in land wherever there are small amounts of salt. It will grow under cultivation in many parts of Texas. Where grown in salt free soils it grows larger and produces more flowers than elsewhere. It is worthy of a trial. The seed should be collected in the wild.

*Heliotropium indicum* L. Introduced Heliotrope. Considered in many places as a weed. Where one wishes a spectacular plant, this will give the desired results. It will grow in any kind of wet soils. It is therefore valuable where one has such problems as the hiding of sewage disposal plants and other similar problems. This species will grow to a height of seven to eight feet and produces lanceolate woolly leaves sometimes six inches in length. It bears throughout the summer small spikes of pale blue flowers. It can be obtained from seed. This plant should recommend itself for a roadside plant where irrigation ditches and standing water are problems for the landscape engineer.

*Heliotropium tenellum* Torr. A peculiar small-growing heliotrope reaching a height of less than one foot. The leaves are almost linear and the flower clusters small. The little white flowers are typical of the genus and are produced in quantity throughout the year. Where one wishes a bed of peculiar plants this is a find. It is annual, hardy, and will stand up under much neglect. It is best procured by collecting seed from the wild.

*Lithospermum carolinense* (Walt.) MacMil. Woolly Puccoon. A very showy early perennial found in sections 7, 7A, 4A, 4, 4B, 1, and parts of 3 and 5. This plant grows from a heavy root stalk which is filled with a juice that imparts a lasting red dye. The plant above the ground is annual and grows to a height of one to two feet and bears many dark

green woolly leaves which are aided by numerous large bracts almost of leaf size. For about three weeks in early spring this plant is covered by numerous golden yellow tubular flowers which are about one-half inch in diameter. As a permanent bedding plant for roadside and yard work, this plant is strongly recommended everywhere that soft soils exist. It will grow in sand, gravel, or rocky soils but not in clay. It should be started by obtaining the seed and growing the young plants in flats. It requires two years from seed to bloom.

*Lithospermum incisum* Lehm. Narrow Leaf Puccoon. Found in every section of the state. One of the first flowers to bloom in early spring; has long narrow leaves equal in color and amounts of wool on both sides. These generally are parallel with the stem, giving the plant a very upright appearance. It bears light yellow flowers the lobes of which are ornamented by small scallops. The roots of this plant contain the red dye material.

*Onosmodium bejarensense* DC. A plant that seemingly has received no common name. It is one of the spectacular spring flowers. It grows to a height of two to four feet. Each stem bears numerous lanceolate leaves which are covered with very coarse wool. At the end of the stem it bears a long cluster of pure white flowers that apparently never open. Because of the oddity of the shape of the plant, the time of year at which it blooms, and the huge colonies in which the plant grows, this species is desirable for park work. It is also adapted to road work where moist conditions occur. The entire plant disappears about the first of June and does not reappear until the first of November, making this valuable to use in summer rotation. The plant can be obtained by root divisions or by collecting and growing it from seed. It is found through sections 7A, 4A, 3, 4, 4B, and parts of 3 and 5 and will probably grow anywhere that it is planted.

*Onosmodium Helleri* Small. This species is similar to *Onosmodium bejarensense*; however it does not grow to exceed eighteen inches in height. It is yellowish green in color and the flowers are much larger than *Onosmodium bejarensense*. The plant is a native of sections 7A, 4A, 4, and parts of 3 and 5. It is generally found in rough hilly land in spots where dense shade and moisture occur. It is easily transplanted by root divisions or grown from seed. It should be planted in rock gardens and collections of little known plants, and for use in mass work in parks.

## VERBENACEAE

*Callicarpa americana* L. French Mulberry. A plant that because of its abundance in the sections where it grows has been neglected by landscape engineers. The plant is a bush with ovate leaves, growing to a height of four to five feet but does better in cultivation where it should be trimmed to a compact plant not to exceed three feet in height. During the middle of summer its new branches bear numerous very small pink flowers in the axils of the leaves. These are followed by a group of mul-

berry-colored fruits which persist throughout a period of two to three months. The plant is found in sections 4A, 4, 4B, 1, 2, and portions of 3 and 5 and will grow anywhere. It is recommended for roadside plantings, for mass shrubbery work in parks, and for background work in yards. Commercial.

*Lantana Camara* L. This is the most common lantana in central Texas. Grows abundantly in sections 4A, 4, 4B, and parts of 2, 3, and 5. It is a low-growing perennial shrub bearing throughout the spring and summer numerous clusters of small red and yellow tubular flowers which are followed by clusters of blueberries. Numerous varieties of this plant are grown by horticulturists. In nature there are seldom two plants which are identical in shade of color or manner of growth. Because of the ease in which the plants can be obtained, their resistance to hot dry weather, and their long life, they are of great value in roadside and park work. The only objection is the peculiar odor.

*Lantana involucrata* L. White flowered Lantana. Found in sections 2, 3, and parts of 4B, also along the Rio Grande in section 5. A lantana with small clusters of white flowers which, because of the willow-like branches, should make a fine ornamental. It is not known in cultivation outside the few places along the Rio Grande. It should be widely used in roadside plantings in the sections where it is native and will probably do well anywhere in the state. Some nursery should make this plant easily available.

*Lantana macropoda* Torr. A native of sections 3, 5, and 6 but found under cultivation in 7, 7A, 4A, 4, 4B, and 1. This is one of the best looking of the native lantanas in Texas and is the one most frequently in cultivation. It is a slim-growing bush arising to a height of only a few feet and having a cluster of white and lilac flowers. Its odor, though typical, is not so penetrating as in *Lantana Camara* L.

*Lippia Berlandieri* Schauer. A slender-growing bush reaching a height of three feet or more. It is found only along the Rio Grande River but will probably grow anywhere in sections 4A, 4, 4B, 3, 5, and parts of 7A. Throughout the year it is covered with small green leaves and bears in early spring and again after rains small spikes of small lavender-colored flowers which make this plant a very desirable ornamental. The plant will do best as a low hedge or as a group of specimen plants. It has no thorns. It is easily transplanted because of the shallow root system. It should be used in roadside and park work throughout the sections where it will grow.

*Lippia lanceolata* Michx., var. *recognita* Fernald and Griseb. Carpet Weed, Frog Fruit. A prostrate green barked annual or perennial growing in large mats on any variety of soil. The stems take root at the nodes. The vine produces numerous lanceolate leaves up to three inches in length. From the nodes it produces throughout the year a round cluster of small white flowers which is borne on the stalk that rises from one



and one-half inches to two inches above the plant. This habit makes it easy to collect seed of this plant which has proven valuable as a yard cover and a soil binder. It is used very extensively to protect newly made road fills and to hold in place newly graded yards and park surfaces. Commercial.

*Lippia ligustrina* (L.) Britton. White Brush. A tall-growing slender branched bush found in sections 7A, 4A, 4, 3, 5, and 6. It reaches its highest population in sections 8 and 9. This species has a great reputation as a honey plant. It has many things in its favor as an ornamental. It can be transplanted any time of year, can be trimmed to shape, and will make abundant bloom any time after a rain of one-half inch or more. The bloom is copious but lasts only throughout a period of three or four days. As the plant bears no thorns, and because of its numerous blooming periods, this is a very desirable hedge plant through all of central Texas.

*Lippia nodiflora* (L.) Michx. Frog Fruit, Carpet Weed. A perennial prostrate vine which will grow anywhere planted and can be found in almost every section of the state. Its greatest value is its use against water and wind erosion. Its manner of growth is such as to make it adaptable to this work. It grows and blooms throughout the entire year producing clusters of white to pink flowers on stalks which raise themselves above the level of the plant, thus making the procuring of seed very easy. Where a soil cover is needed at once to protect the newly graded surface, the plant should be brought in as root divisions. These should be laid flat on the surface and watered. They will put out new growths at once and give the protection needed. This is one of the plants native to Texas that should be very widely utilized in park and road work.

*Verbena ambrosifolia* Rydb. Western form of Common Verbena of the whole of Texas. It is found as abundantly in sections 7, 5, and 6 as *Verbena bipinnatifida* is found in the remainder of the state. The leaves are longer than wide. The flowers are of a deeper shade of color than the eastern relative. This species should be introduced in the central parts of the state as there is no doubt that it will maintain itself through long periods of time. It is in cultivation in many places. To obtain this plant, the seed pods should be gathered as soon as ripe, and seed planted only where it is to be grown.

*Verbena bipinnatifida* Nutt. The native lavender verbena of most of Texas. This is the earliest and most persistent of verbenas in the state. It blooms in early spring and under normal conditions will bloom through the summer. It can be transplanted from the wild in early spring or the seed secured and planted in mid-winter. This species is very widely used as a roadside planting in parks and is the foundation from which many horticultural varieties have been derived. Commercial.

*Verbena quadrangulata* Heller. A small-flowered pink verbena native to the Gulf Coast where it takes the place of *V. bipinnatifida*. Because of the differences in shade of color, this plant should be introduced into yard and park work to get a variation in color. It is easily grown from

seed but can be purchased or collected anywhere along the Gulf Coast. There are twenty-two other species of verbena within the state. These range from annuals through perennials and through color from white to deep blue. A number of these have been taken into cultivation and can be purchased from seed stores. Some of the blue-flowered species produce quite large and showy spikes of flowers but as yet have not become common in cultivation. Those wishing to try new flowers should attempt the cultivation of the wild verbenas found within their own territories.

*Vitex Agnes-Castus* L. Mexican Lavender. A tree growing to twenty feet height which is found throughout sections 4A, 4, 4B, 3, and parts of 5, in cultivation or as an escape. Throughout the summer it is covered with numerous clusters of small purple flowers. The entire plant is supposed to bear the odor of lavender. The leaves and blossoms are used by Latin people as a preventive against moth. This ornamental is desirable; however to keep it in shape the old wood should be completely cut away so that new vigorous wood is present to bear flower clusters.

*Vitex negundo incisa*. Japanese Vitex. This ornamental is mentioned in connection with Agnes-Castus. The plant has been newly introduced into Texas and in certain places apparently will become native. It grows more as a bush than the other species and has light green leaves with no odor. The plant bears throughout the summer large numbers of light blue flowers. These have the habit of opening about ten o'clock A. M. and remaining open until after dark. It is a fine honey plant and it is not uncommon to see bees working it until the darkness causes them to leave or to remain for the night on the plant. This is a species that should be very largely procured from nurseries as it is a most valuable ornamental.

### LABIATAE

*Brazoria truncata* (Benth.) Engelm. and Gray. A native of sections 7A, 4A, 4, 4B, and parts of 2, 3, and 5. A plant common to localities where soft and sandy soils occur. It grows to a height of about one foot, bears a thickened spike of white tubular flowers spotted with pink. The plant produces flowers through a period of nearly two weeks. The short-clustered flower spikes give rise to the common name of Rattlesnake plant as it is supposed to resemble the rattles of a snake. The plant is annual. The seed should be harvested about two weeks after the flowers are through blooming and sown the next fall. The plant will do well only in sandy and moist places.

*Hedeoma Drummondii* Benth. False Pennyroyal. Lemon Mint. An aromatic plant with delicate stems rising to a height of twelve to fourteen inches. It grows in shady and moist localities. It is perennial and does most of its growing during the summer. In early spring it bears numerous small blue flowers. It is a good honey plant and a desirable species

to grow in beds of rare or interesting plants. The aroma of this plant is very desirable as is that of all of the plants in this genus. There are ten other members of this group ranging from a species which is peculiar in that it is less than three inches in height but produces numerous tiny pink flowers with extremely long corolla tubes, to the species just described. All members of this family are called pennyroyal and have been used by various peoples to make medicinal tea. Where an interesting plant is wanted the nearest species of *Hedeoma* to the grower should be the one collected and grown.

*Lamium amplexicaule* L. Henbit or Dead Nettle. This plant is mentioned for no other reason than to warn amateur gardeners of the danger of allowing this mint-like plant with its small red flowers to obtain a hold in the garden. This plant is one of the hardest weeds to combat, especially in truck garden crops.

*Leonotis nepetaefolia* A. Br. Lion's Head. The most spectacular of the mint family, a plant introduced from Africa through the port of Galveston. At the present time it is native all over the state. It grows in soft soils where moisture occurs and will grow in dense shade. The plant puts up a straight stalk in early spring which will reach a height of from six to eight feet by the middle of summer. It bears on the upper third of this stalk clusters of bracts from which come red mint flowers, some of these flowers being two and one-half inches in length. This flower cluster is supposed to resemble the mane of a lion, hence the name. Where in parks or roadside work weed patches are to be done away with, this mint is a fine substitute. It is sufficiently strong growing to hold its own against native weeds. The peculiar flowers which are borne throughout a period of three or four months will attract the attention of every passerby. Commercial.

*Marrubium vulgare* L. Hoarhound. A most common mint introduced from Europe. At one time this herb was cultivated in every home garden to supply a simple remedy for coughs and colds. This drug can be had in the hoarhound candy of commerce. The plant seems to follow the sheep industry and in any sheep country this mint is extremely common. It has little value as a forage plant, but it does have a value in that it can grow under adverse conditions, ties together blowing or washing soils, and furnishes a protection for grasses until they can obtain a foothold. It is probable that in allowing this plant to occupy the roadsides that the Road Commission is preparing in the cheapest and best way a rough soil for a natural succession of beauty plants which will in time take the place of hoarhound. It is true that it is a nuisance around a building and should be eliminated, but on rough pasture lands and roadsides it is best to let this plant have its own way.

*Mentha piperita* L. The cultivated peppermint. A plant that has become widespread and is too well known to need any description. It is of interest to know that peppermint is growing in the most isolated parts of the state, indicating that it has become thoroughly naturalized.

*Mentha spicata* L. Spearmint. Found in sections 4A, 4, 4B, and 5. Whether this plant is indigenous or introduced is not known; however it is widely distributed. Where one has the need of this herb, it is easily grown by obtaining the seed from a dealer. It should be grown in a collection of well known herbs which should be maintained in every park or botanical garden.

*Monarda citriodora* Cerv. ex Lag. This is the name under which a large number of native varieties are grouped. The Citriodora group is the one which includes the purple-colored mints of the limestone country. They are the most beautiful of the native horsemints and are easily grown by collecting the seed in the middle of summer and sowing them early the next fall. In this group the colors vary from white to deepest purple, and the size of the flower clusters varies from two inches up to three and one-half inches. This group is found throughout central Texas.

*Monarda fistulosa* L. Horsemint. The group of horsemints which bear only terminal clusters of deep red flowers with long corollas commonly called bergamonts. In Texas this group is found in sections 4B, 1, and 2 but will grow in cultivation in 7A, 4A, 4, and parts of 3 and 5. Where a beautiful slender plant bearing a large cluster of showy flowers is needed, this is the plant. As it is biennial or perennial one should secure the plant by root divisions. Certain strains of them have the flower clusters four inches in diameter.

*Monarda pectinata* Nutt. A species of horsemint that has no varieties and which is easily told from all others. It is a native of sections 7, 5, and 6 where the plant grows in sandy localities. The stems are prostrate but at blooming time the portion of stem which bears about three clusters of pink horsemint flowers turns upwards, giving one of these plants in full bloom the appearance of a large number of single plants blooming close to the ground instead of but one plant. This is a beautiful mint and well worthy of cultivation through the sandy regions of the state.

*Monarda punctata* L. Horsemint. In this group fall all those horsemints that have light green bracts under the floral clusters. The group contains annuals and perennials. The annual members of the group which grow in sections 4, 4B, and 3 produce probably a greater portion of the honey crop than any other plant in Texas. The perennial members of this group grow only in the sandy districts of sections 4, 4B, 1, and 3 and should be used in planting in any park or along roadsides where sandy areas exist. It bloom throughout the summer and its ivory white and yellow flowers make it attractive.

*Physostegia virginiana* (L.) Benth. Dragon Head. A very beautiful member of the mint family. It grows in swamps or wet places; square stems arise to the height of eighteen to twenty inches and bear at the top spikes of bright pink tubular flowers sometimes two inches in length. These clusters are produced throughout the summer. The plant



is not uncommon throughout sections 4A, 4, 4B, 2, and parts of 3 and 5. It is common in all collections of ornamentals. The seed can be purchased. Four other species of this genus are native to the eastern parts of Texas; however they are so similar to this one that all species should be used. A fine addition to any water planting or moist place in a yard or park.

*Prunella vulgaris* L. Self-heal. A small member of the mint family growing in sections 4, 4B, 1 and worthy of cultivation elsewhere. The plant grows to a height of six to eight inches, each of the slender stems producing a head made up of a number of blue mint-shaped flowers. This plant does well in soils where because of scarcity of plant food it is difficult to grow ornamentals. The seed can be obtained by collecting the ripened flower heads and should be immediately scattered where the plant is wished. The natural breaking up of the soils and increase of plant material in the soil brought by the growing of this plant will in several years doubtless produce a soil in which any ornamental may be grown.

*Pycnanthemum albescens* T. and G. White Leaf Mint. A tall slender-growing mint bearing many leaves toward the top of the stem, which rises to a height of about three to four feet. In midsummer the tips of the branches bear clusters of peculiar blue-mint flowers. The plant is perennial and the several stalks arising from the root clusters add considerably to the beauty of that portion of the park or yard where it is a permanent fixture.

*Salvia azurea* Lam. Giant Blue Sage. The largest of the compact-growing blue sage plants found in sections 7A, 4A, 4, 4B, 1, and parts of 5. The plant grows from a compact perennial root and bears clusters of from fifteen to twenty stalks from the same root. These produce throughout the summer and fall clusters of blue flowers about three-fourths of an inch long. This sage plant should be grown in every yard or garden and especially along roadsides within these sections. Transplanting appears to be beneficial to the plant in that it breaks up some of the old root stalks and allows a place for the growth of new.

*Salvia ballotaeiflora* Benth. Shrubby Blue Sage. Native to sections 7A, 4A, 4, 3, 5, and 6. It is a shrub growing to a height of four or five feet and bearing numerous light green leaves through the year. Through the summer it bears small blue flowers in great quantity. Like any desert plant, this shrub has the habit of dropping its leaves in times of drought and putting out new ones with the coming of rain. This species is a beautiful hedge plant. It responds readily to cultivation and pruning; however the old wood should be removed at least every two years in order to obtain straight and numerous young shoots on which the flowers are borne. Commercial.

*Salvia coccinea* L. A sage coming from a perennial root stalk, native of sections 4A, 4, 4B, 1, 2, and parts of 5. This plant prefers soft sandy soils and is partial to those which occur along water courses. It will

grow to a height of three to four feet and will bloom from early spring until frost. The plant is grown either by obtaining root divisions or collecting the seed. A very desirable plant for sections 7A, 4A, 4, 4B, 3, and 5.

*Salvia farinacea* Benth. The Mealy Blue Sage. A plant native in sections 7A, 4A, 4, 4B, 1, 3, and 5. It grows as a cluster of bright green mint leaves from a heavy perennial root. Throughout the summer the stalks are tipped by spikes of blue to purple mint flowers. The entire plant is covered with a mealy-like pubescence. A cluster of this mint is very desirable and plantings should be made along roadsides and in parks assuring permanent ornamentals.

*Salvia Greggii* A. Gray. Native in sections 3, 5, and 6 but will grow anywhere it is planted. It is partial to soft soils and good treatment. It likes the full sun. The plant is a shrub with slender stems and produces through the summer large numbers of red mint flowers. It makes a beautiful hedge and responds to pruning. The plant, however, should be cut almost to the ground at least every two years to obtain new wood.

*Salvia lyrata* L. Lyre Leaf Sage. This is an annual sage plant native of sections 7A, 4A, 4, and parts of 3 and 5. The plants appear about Christmas as a small rosette of lyre-shaped leaves. This rosette increases until March or April, at which time some of the leaves are at least eight inches long. From the center of this large rosette come two or three stalks rising to the height of eight or ten inches which bear from six to ten beautiful blue sage flowers about one inch in length. The plant can be propagated very easily by obtaining the seed and planting them in the fall of the year. A very desirable plant where one has soft soils and much shade.

*Salvia Pitcheri* Torr. This is one of the most widely distributed of the the sage family, being found in almost every section of the state. It grows from a perennial root cluster and throughout the summer puts up a long slender spike to the height of three to five feet which bear along one-half of its length large, dark blue sage flowers. This plant because of its very long naked spikes and blue flowers is widely known; however the plant is seldom seen in cultivation. It responds to good treatment and when planted, protected, and given a small supply of moisture will produce much better effects than any of the blue flowered ornamentals.

A number of other species of *Salvias* occur in Texas, all of which are worthy of cultivation for ornamentals. As these plants are all hardy, most of them perennial, they offer opportunities for permanent plantings in parks, and along roadsides that are not offered by some of the more popular species.

*Scutellaria Drummondii* Benth. Skullcap. This is the most common species and is found in every section of the state. It is a low growing mint, the plants of which consist of upright stems with crowded opposite leaves, rising to a height of about four inches. In the axil of each leaf

are produced from one to three blue flowers followed by seed pods which give the name to the species. The plant is an annual or perennial and makes a most excellent border or bed plant. It will grow either in the sun or in the shade of trees. The plant should be obtained by collecting the seed. There is no more beautiful plant for roadside work than this low-growing, blue-flowered mint. This genus contains nine other species, all of which are equally as valuable. Some few of the species produce rather large purple flowers and should be grown in the districts in which they are common. If a small collection of plants is maintained in yards where there is little room for display, the *Scutellarias* are valuable plants as they disappear early in the spring and leave room for summer and fall blooming species.

*Stachys Drummondii* Benth. Pinkmint. A mint-like annual which is found in sections 2, 3, 5, and 6. It is doubtful if this mint will grow far outside of its native habitat; however it will probably grow throughout sections 4, 4B, and 1. The plant grows to a height of about two feet, is a typical mint, and bears throughout February and March a profusion of pink mint flowers. The plant occurs in such quantity that in places the entire landscape appears pink. It is one of the finest early bee plants in Texas. Where grown in a garden, about all the attention that is needed to procure a stand of these plants and to have two weeks of beautiful bloom is to sow the seed. This is borne profusely and should be gathered as soon as it ripens. The seed should be sown in November.

*Teucrium canadense* L. Wood Germander. A typical mint-like plant growing to a height of two feet bearing a spike of pink flowers in the early part of summer. These spikes bloom through a period of at least three weeks. The plant likes moist places in deep shade, which makes it valuable in park and water-side plantings. Under protection and some cultivation it is most profuse in its blooming. It is annual or perennial and can be obtained by root division or from seed.

*Teucrium cubense* L. Coast Germander. A very showy and desirable plant. It comes from an underground root cluster. Each stalk grows to a height of about one foot. The leaves are numerous and finely divided, making the stem somewhat resemble a small cedar. This stem will produce a spike bearing from six to ten peculiarly shaped white flowers almost one inch across. A cluster of these plants will bloom from June until frost. The plant is found abundantly on the Gulf Coast. it should be used as a border plant in yards and as a bed plant in park work. For roadside plantings it should be started in masses until it has maintained itself and increased to such an extent that it will become the dominant plant in the section around it.

*Teucrium laciniatum* Torr. Prairie Germander. A species closely resembling the last; however the plant grows only about five inches high. The root clusters send up numerous stalks which make a continuous bloom throughout the summer. The flowers are at least one inch long,

and the peculiar combination of feathery green leaves and white flowers makes a combination that is very attractive. This is the best plant for roadside work through sections 7, 7A, 4A, 5, and parts of 4 and 3. As a yard plant there is no better for row or bed planting.

*Trichostema dichotomum* L. Blue Curls. A most peculiar dainty member of the mint family. A very slender-growing plant arising to the height of about one foot. It produces many curiously twisted blue flowers through the summer. It is found in sections 1 and 2 and will grow in sections 4A, 4, 4B, and parts of 3. This plant should be brought into cultivation as it will repay anyone for collecting and planting the seed.

### SOLANACEAE

*Capsicum baccatum* L. Chilipiquin, Bird Pepper, and Texas Strawberries. A slender-growing, green-barked shrub bearing typical Solanum leaves and flowers which are followed by red peppers about one-eighth of an inch in length. This is supposed to be the hottest of all the Solanum peppers. The plant is found throughout the southern half of Texas and will grow anywhere that it is planted in a moist and shady location. Its preference is rich river valleys in dense shade. The plant rises to the height of about three feet, produces numerous small white flowers, and throughout the fall and winter is a mass of bright red peppers. A hedge of these peppers is a great addition to any park. A specimen plant will be a curiosity in yards and beside water plantings. This species has been cultivated in window boxes until it has become one of the standard plants for that purpose. One of the finest hotels in the state of Texas grows this plant in the windowboxes in its lobby, to the satisfaction of everyone.

*Chamaesaracha coronopus* (Dunal) A. Gray. A most common but almost unknown member of the Solanum family. It is a prostrate perennial which occurs in great quantity on waste lands, and blooms early in the spring. The flowers which are one-half inch in width resemble those of *Physalis*; however the seed of this genus consists of a hard green berry. This plant is quite valuable in roadside work. It is one of the plants which bind the ground together during the late winter and early spring. The light yellow flowers en masse give a very pleasing appearance. The plants disappear and are succeeded by other and more showy ones which grow in like locations. This is recommended wherever one wishes a plant which will bloom early in the spring to occupy the same bed with later-blooming native plants.

*Datura Metel* L. Entire leaf Thorn Apple. Native of the southern half of Texas where it was probably introduced many years ago by Indians or Spaniards. This species bears the largest flowers of the groups, the large white trumpet-shaped flowers and its calyx tube sometimes reaching the length of one foot or more. The opening of the tube is sometimes five inches in diameter. A flower lasts but a single night. It opens at sundown and falls with the heat of the sun during the next



morning. The plant has a perennial root. When started, the plant will maintain itself for years and produce during the season hundreds of these large white flowers. This is a very attractive plant in sandy soils in parks and even along roadsides. The very fact that it is open at night makes it an addition to any wild flower garden. It produces large thorn-covered pods which contain numerous hard seed, every one of which will grow, making it easy to obtain a start of this plant.

*Datura quercifolia* H. B. K. Oak Leaf Thorn Apple. This is the common jimson weed of sections 1 and 6 and is found to some extent in 7A and 5. It grows to a height of three or four feet and is found along almost any stream or water course. It has a white trumpet-shaped flower, some four inches in length, which is followed by a very peculiar seed capsule, covered with a few but very large spikes. The plant is suitable for roadside planting or to cover unsightly places along water plantings.

*Datura Stramonium* L. Jimson Weed. This is the jimson weed of the East and is found throughout sections 7, 7A, 4A, 4, 4B, 1, and 2. It is mentioned here because of the fame of this plant in literature. It grows to a height of from two to five feet and branches in twos. In the axils of each leaf, a white tubular flower is borne. The plant is spectacular as the stems are red. The flowers are numerous and white, and the lanceolated-toothed leaves are a peculiar green. In Texas the plant is a curiosity. In parts of the Old South it is one of the worst weeds.

*Lycium carolinianum* Walt. var. *quadrifidum* (Moc. and Sesse ex. Dunal) C. L. Hitchc. The large-fruited Matrimony Vine. A vine-like shrub with green succulent branches and leaves bearing small white to purple flowers which are followed by bright red tomato-like fruits almost one-half inch in diameter. A very desirable plant for a small hedge or a specimen plant. It does best in sandy soils where some moisture is available but can endure long periods during which time it drops its leaves and becomes dormant. With the coming of rain the response is very rapid, as the plants will develop leaves and bloom within four days after the beginning of a heavy rain. It also has the peculiarity of being able to grow in standing water. In many places small lakes are filled with this bush which rises to a height of a few feet above the water and produces hundreds of bright red fruits. During the fall and spring migration of water fowls, these fruits are very attractive as food. Four other species of this genus are also adapted to ornamental work since they can be used as low-growing hedges or as a ground cover. They respond to pruning and cultivation. Their endurance of dry weather and their quick comeback make these species valuable to those people living in the semi-desert parts of the state.

*Lycopersicon esculentum* Mill., var. *cerasiforme* Alef. Wild Cherry Tomato. A wild tomato found along the Gulf Coast and the Lower Rio Grande river. Differing from the cultivated varieties, this grows as a single tall stem bearing numerous yellow tomato flowers in a spike

at the top. These are followed by very small red tomato-like berries. Wherever this plant will grow, it will be an oddity worth the planting of the seed. To the horticulturist this plant has in it an opportunity for the development of a more hardy variety than those cultivated at present.

*Nicotiana glauca* Graham. Sacred Mustard. A plant perhaps introduced to Texas; however it appears native throughout sections 2 and 3 and parts of 4, 4B, 5, and 6. The plant grows in the frostless areas to a height of thirty feet and a diameter of four inches. It bears throughout the year clusters of tubular yellow flowers about one and one-half inches in length. These are followed by cup-shaped seed capsules which contain many extremely small seed. The leaves are lanceolate and dark green, and resemble Eucalyptus. This species is the champion hummingbird plant as these birds will be present wherever this plant blooms. The common name comes from the fact that this must be the plant with the smallest of seed which harbored the birds in its branches. Throughout the sections where this grows, specimen plants are worthy of places in any planting.

*Nicotiana repanda* Willd. The common Wild Tobacco of the southern part of Texas. The large rosettes made up of a few green leaves which are so conspicuous along water courses in the early spring belong to this species. In late spring a flower stem arises which bears from one to a dozen white trumpet-shaped flowers with corollas at least two inches in length. In yards or water plantings a bed of these plants is desirable. They, too, have the habit of being able to add beauty to the winter landscape through their large rosettes, and to disappear before the desirable plants of spring and summer are ready to bloom.

*Petunia parviflora* Juss. Wild Petunia. Found in sections 4, 4B, 2, 3, 5, and 6. This plant is given not because it is of any special worth but because it is confused with cultivated petunias which have gone wild. The native petunias have a flower so small that it is seldom noticed; however the leaves resemble those of the cultivated species. Where cross breeding is carried on, the wild petunias make an excellent stock on which to cross the introduced species.

*Physalis angulata* L. Cut Leaf Ground Cherry. This ground cherry is of great use where a water area must be landscaped. The plant will grow in the edge of any standing water. It is an annual, grows rapidly, reaches a height of three feet, and covers the ground for at least three feet on each side of the root. The leaves and stems are somewhat brighter green. It produces a large number of clay-colored flowers not more than one-half inch in diameter which are followed by bright green bladder-like pods three-fourths of an inch in diameter and having ten angles in the cross section. The fruits are edible. The plant will continue to grow and produce fruits from early spring until fall. The seed should be sown as soon as the danger of frost is over in spring.

*Physalis ixocarpa* Brot. (*P. acquata* Jacq. f.) Mexican Ground Cherry of commerce. The plant is a winter annual. In order to obtain good fruiting specimens this should be planted in early September and again in January. It is a typical *Physalis* annual plant and grows to considerable size. The greenish yellow flowers are followed by tomato-like fruits which are green or purple in color, reach a diameter of one and one-half inches, and completely fill the bladder-like capsule. The fruits are an article of commerce throughout South Texas. The seed can be obtained from any dealer.

*Physalis lobata* Torr. (*Quincula lobata* Britton.) Prostrate Purple *Physalis*. The most ornamental species in the genus. It is found most abundantly in sections 7, 7A, 4A, 4, 3, and 5 and will grow anywhere in the state where planted. It consists of numerous perennial root stalks which give rise to a mass of small stems bearing lobate green leaves which lie flat on the ground. From the axils of these leaves are borne purple flowers with white centers. The flowers are at least three-fourths of an inch in diameter and because of the large numbers of them and the fact that they are flat on the ground they give the clusters a very pleasing appearance. This plant is of great value in roadside work. The grading of the road removes the grass and dead weeds, forming a very attractive and favorite bed for the plants which, to repay the labor, put forth numerous new stems that produce the brilliant purple flowers. There is no more beautiful sight throughout the Low Plains Country than a newly graded roadside covered for stretches of miles with this purple-flowered plant. It is recommended for planting everywhere.

*Physalis macrophysa* Rydb. Large Bladder Ground Cherry or Lantern Plant. A perennial ground cherry found growing in shady woods on soft soils. The capsules are often two and one-half inches long and two-thirds of that amount in diameter, the fruits being very small. The pods are almost as ornamental as those of the cultivated lantern plant which is a species of *Physalis*.

*Solanum elegnifolium* Cav. Silverleaf Nightshade. Found in sections 7, 7A, 4A, 4, 4B, 2, 3, 5, and 6. One of the best known nightshades in Texas. Its lanceolate silver gray leaves and pale purple flowers grown abundantly throughout the hot dry summer recommend this plant for extensive roadside plantings. Its heavy underground root system allows it to maintain itself in spite of new road work, and each new working insures a sudden return of new showy plants to take the place of the old. Where roads must be graded often to procure a lasting road bed, this plant should be the one to be planted and encouraged. It is best propagated by root divisions. In park work this has a place as a border for paths and roads.

*Solanum nigrum* L. The Black or Deadly Nightshade. A tall succulent dark green plant bearing numerous white flowers from the axils of the leaves followed by green berries which turn black. These are about one-third of an inch in diameter. Contrary to folk-lore there is nothing poisonous about this plant. A variety, the wonder berry, a generation

ago, attracted much attention as a new fruit for the Western Plains country. An interesting variety which may be found in woodlands and which does not exceed two inches in height, bears a number of minute flowers, and is only a starveling of this species.

*Solanum Torreyi* A. Gray. Purple flowered Nightshade. A variety of the nightshade in sections 7, 7A, 4A, 4, 4B, 3, 5, and 6. The plant grows to a height of two to three feet rising from a heavy underground root stalk and producing numerous lanceolate leaves which are angled. Throughout the summer it bears five-sided bright purple flowers more than one inch in diameter, making it a very spectacular plant. Those who do not know this species should not attempt to pick the plant as the lower parts of the stem are protected by sharp spines. Following the flowers are borne tomato-like fruits which are bright yellow. Some of these reach a diameter of one and one-half inches, making this species of *Solanum* one of the best for cultivation in parks where a cluster is a desirable accession. Along roadsides this plant should be propagated as its root system stops washing and the plants aboveground are beautiful.

*Solanum triquetrum* Cav. The Vine Nightshade. A perennial vine which has long been used by the Indians and Spanish-speaking peoples as an ornamental. In frostless areas this will grow to great length covering tall trees with masses of green almost leafless stems and during the summer and fall, it will bear thick clusters of white *Solanum* flowers, followed by red berries which remain on the vine throughout the winter. Where frosts occur, the plant acts as an annual aboveground, but will bloom as soon as the plant reaches a height of a few inches and will continue to bloom until frost. This plant because of its lack of leaves is an excellent vine to grow in a hedge that produces only showy leaves. The vine with its wealth of white flowers and red berries ornament the otherwise plain green hedge.

### SCROPHULARIACEAE

*Castilleja indivisa* Engelm. Texas Painted Cup. Found in sections 4A, 4, 4B, 1, 2, parts of 3 and 5. A low-growing annual with lanceolate entire leaves bearing red tubular flowers accompanied by colored bracts. This is the most widespread and abundant of the painted cups. This entire genus is partially parasitic. It is quite difficult to get the plants started away from the original stand. The seed are very small and if planted in a worked garden will seldom grow; however if a square of sod or soil bearing a flowering plant be transferred to the place where the new growth is wanted, the gardener may feel assured that the next year he will have a fair crop of these plants. It is much easier to start the plant from seed by depositing the seed in the grass on a lawn than by planting in an open garden. Because of the beauty of this plant is will well repay the efforts to get it to grow.

*Castilleja Lindheimeri* A. Gray. Indian Paint Brush. A strong-growing painted cup native to sections 4A, 4, and parts of 3, 5, and 6. This plant is as highly colored as the first species, but the colors are softer and more varied in the number of hues. This plant like the other can be transplanted by removing a section of the original place of growth with the plant.

*Gerardia heterophylla* Nutt. The Prairie Gerardia. A beautiful but little-known plant growing to the height of about two feet, having dark-colored slender stems, small lanceolate to ovate leaves, and bearing numerous trumpet-shaped pink to red flowers about one-half of an inch in length. This Gerardia grows through the central part of Texas and can be grown by collecting the seed and sowing it in the early fall. Gerardia like some other species are more or less periodic. In the wild the plants will be quite abundant and then it will be a number of years before one is seen again; however all the species respond to cultivation to such an extent that after the seed is planted in the fall of the year, the grower will be rewarded by numerous plants the next spring.

*Gerardia purpurea* L. Large purple Gerardia. Found in sections 4B, and 2 and will grow in parts of 4A, 4, 3, and 5. A plant very similar to the last species but bearing a purple flower about one and one-half inches long, this is a very showy plant and should be grown in yards where one wishes new and little known flowers. It has its place in park plantings, in that it can be started on hillsides and will take care of itself throughout the years. For roadside work the seed should be scattered where soft soils occur. The result will be occasional groups of this large purple-flowered ornamental.

*Leucophyllum frutescens* (Berl.) Johnston. Ceniza. Gray green shrub found in sections 3, 5, and 6 but is growing under cultivation in every section in the state. It is too well known to need description. It is best secured by buying balled plants from nurseries. To have species in good bloom each year the old wood must be cut from the bush in November or December. This assures new wood and an abundance of bloom for the next year.

*Leucophyllum minus* A. Gray. A low-growing and almost prostrate gray green shrub found only in Trans-Pecos Texas. It resembles *Leucophyllum frutescens* except that it has much smaller leaves and flowers; however for a beautiful bush to ornament a rock garden or to give color to a collection of desert plants, there is nothing more beautiful than this prostrate shrub. This, like the other species, should be purchased from a nurseryman.

*Linaria texana* Scheele. Blue Toad Flax. A very dainty blue-flowered plant consisting of a rosette of ovate leaves which become noticeable in very early spring. With the first warm days a stalk is put up to a height of about one foot, from which comes six or eight bright blue flowers. One side of the corolla tube is prolonged to a spur. As the plant is an annual, native to nearly all of Texas, it will pay anyone



interested in growing peculiar plants to collect the seed in April and May and sow it again in October and November. After it is sown on freely worked garden soil, the gardener can be assured of a good stand of these plants. The flowers are small and the bloom lasts but two weeks; however the beauty of the bed will amply repay the grower.

*Linaria vulgaris* Hill. Butter and Eggs. A perennial *Linaria* introduced around the large towns of Texas; will grow anywhere it is planted. It consists of underground root clusters which in early spring give rise to numerous straight stems about one and one-half inches long. These stand upright along the stems. From the top a cluster of fifteen to twenty snap-dragon yellow flowers, each one of which has a large spur, is borne. This plant, unlike most of the introduced weeds, is peculiar in that it does not spread. A cluster of them will bloom each year and yet never increase in numbers. If one wishes new plants, root divisions or growing from seed must be resorted to. It is quite interesting to record that this plant is known throughout Europe as "Tausend Golden Kronen" and in this form plays a very important part in the folk-lore history of Europe. This story has been transported to central Texas and so altered as to fit the country, the people, and flowers, and strange to say in central Texas "Tausend Golden Kronen" is the name applied to a pink flower.

*Maurandya antirrhiniflora* Humb. and Bonpl. Blue Vine Snapdragon. An annual plant native to sections 4A, 4, 4B, 3, 5, and 6, but will grow anywhere in the state of Texas. It is very prolific, producing numerous slender green stems which cover the support given to the plant. The leaves are about one-half by one inch and somewhat triangular. Through the summer and fall this plant is covered by blue and white snapdragon flowers and after the coming of cold weather the vine is a mass of capsules, thus making it easy to obtain seed. The seed should be planted in November and December in yards where small trellises are to be covered. Where an evergreen or other hedge which produces no flowers of its own is used, these plants should be grown on either side; thus in late summer the hedge will bear numerous blue flowers as the vine to which the flowers belong will not show through the leaves of the supporting plant. This dainty vine is excellent around a porch where it needs only a very light support.

*Mimulus alatus* Ait. Found in sections 4A, 4, 4B, 1, and 2. It grows in moist or wet places along the margins of water courses and swamps. It grows to the height of eighteen to twenty inches and produces in the axils of the lanceolate leaves violet flowers which are not over one inch in length. The plant will grow as an annual during the first year, after which it returns from perennial root stalks. It is easily transplanted by root divisions or grown from seed. This plant is one of the best for winter plantings in parks and along water fronts. It has a place in any yard which has a small lily pool. Commercial.

*Penstemon ambiguus* Torr. The Pink Plains Penstemon. A plant native to sections 7, 7A, 5, and 6 and will undoubtedly grow in 4A, 4, 4B, 1, and 3. The plant grows from a heavy cluster of perennial roots. In early

summer it puts up a number of straight stems about one foot high. These and succeeding stalks bear throughout the summer numerous pink tubular flowers about three-fourths of an inch long. The plant at a little distance reminds one very much of Phlox. The mouth of the corolla tube, differing from most tubular flowers, is abruptly turned upward giving a peculiar shape to the flower. There is no record of this plant having been cultivated, but as many other species of this genus have been brought into cultivation, there is no doubt but that this one will respond just as readily. The plant can be secured by root divisions or grown from seed. As it occurs all over the state, it doubtless will flourish and in time become a commercial plant.

*Penstemon Cobaea* Nutt. Foxglove of Texas school children. One of the largest and most showy of the Texas Penstemons. Native throughout Texas. The leaves are smooth and glossy, the flower stem tipped by a long spike of showy pink to red flowers. The plant is annual or biennial. It can be grown from seed. As a plant in any yard, it is a beautiful addition. In park work the seed of this species should be sown on hill-sides where shade and moisture exist. Commercial.

*Penstemon grandiflorus* Nutt. Large-flowered Penstemon found in sections 7, 7A, 4A, 4, 4B, and 5 and will probably grow anywhere planted. A tall-growing plant with smooth succulent leaves and bearing very large blue to purple flowers, some of the corollas being two inches in length. This plant is common in the northern plains country which extends into Texas. It is annual or biennial. The seed can be procured by collection from a plant grown in the wild or purchased. The seed should be sown in September or October in a well-prepared seed bed preferably in partial shade. The seedlings are very small at first but rapidly form a rosette. If the winter is dry the plant should be watered in case a bloom is to be expected in the summer. This is an extremely interesting plant and should be extensively propagated where moisture and rich soils occur throughout northwest Texas. It has been grown in yards with great success.

*Penstemon Murrayanus* Hook. The Honeysuckle Penstemon. Found in sections 4A, 4, 4B, 1, and 2. This spectacular Penstemon grows in sandy soils generally in woodlands. It is a biennial or perennial and is best secured by planting the seed in September and October in well prepared seed beds where the plant is to remain. It grows to a height of three and one-half to five feet. The leaves are ovate to triangular below and united at the base above. The leaves are light green and succulent. From the tips of the stem rises a spike bearing numerous red tubular flowers, some of them better than two inches in length, which makes a bed of this plant much resemble the red honeysuckle vine. Wherever soft soils, some shade, and moisture occur, this species should be propagated. In many places where it has been protected, it has maintained itself for long periods of time. This plant attracted the attention of the early settlers in northeastern Texas where the plant is found abundantly around the older dwellings.

*Verbascum Blattaria* L. Moth Mullen. An introduced plant found along the Gulf Coast. It is a winter annual and produces a rosette of thin lanceolate green leaves through the winter. In the summer it sends up stalks to the height of two to five feet which bear white to yellow flowers sometimes one and one-half inches across. It is a splendid plant to form a background for more showy species. It is able to maintain itself anywhere and should be planted along roadsides, as this will give in a short time a spectacular flower garden. It is to be remembered that this plant may become a weed; therefore it must be held in check by the gardener. Commercial.

*Verbascum Thapsus* L. Mullen. Found in sections 7, 7A, 4A, 4, 4B, 1, 3, and 5. This is the mullen of Europe and America. Nowhere in Texas is it very abundant with the exception of some parts of sections 1, 2, and 9. The plant itself will attract the attention of anyone, especially when it is full grown. The plant is an annual or biennial. Under optimum conditions the seeds germinate in October, and in November form a rosette of lanceolate leaves, sometimes fifteen inches long and covered with thick white wool. Sometimes these rosettes exist through a growing period of two to three years, storing sufficient food to ripen the seed. When moisture is sufficient, a stem arises from the rosette which at times reaches a height of seven to eight feet. The lower part of the stem is covered with small lanceolate woolly leaves bearing a single light extension which reaches from one leaf to another, the whole thing being covered with wool. From June to September the flowering stalks, which are on about the upper third of stalk, produce yellow flowers three-fourths of an inch in diameter. Where the plant is in flower it is one of the most interesting of ornamentals. To someone who has never seen this plant before, it is a source of wonder and delight. It can be obtained by planting the seed in the fall and thinning out the rosettes in early spring so that they have room and are allowed to bloom where planted. This species is recommended for roadside and park work as it will grow and thrive on rocky hillsides where some plants fail.

#### LENTIBULARIACEAE

*Pinguicula pumila* Michx. A swamp plant growing in sections 4A, 4, 4B, 1, 2, 3, and 5. This plant will grow anywhere in wet places that it is given protection. It is one of the plants which has been used in lily pools and in small water gardens. The plant consists of a rosette of flat lanceolate leaves. It bears through the year slender stalks reaching a height of from three to eight inches that bear a light blue flower nearly one inch in length. The plants need shade and much moisture, and must not be exposed to the direct rays of the sun. This plant is an addition to any small garden where water planting is maintained. In parks where water plantings exist, a bed set apart to this swamp plant is attractive. It can be secured by obtaining seedlings in the wild or growing from seed. The seed should be sprinkled on the surface of the ground where the plant will grow. The seed will germinate any time of year.

*Utricularia gibba* L. Hump-back Bladderwort. A very desirable plant for shallow water plantings. It will grow and bloom abundantly throughout the hottest weather in the full sun if the plants are brought there in the fall or winter and placed where marshy conditions exist. The leaves are almost hair-like and inconspicuous; however the very small bright yellow flowers, which occur in numbers, make it a very desirable species for water plantings or to be raised around lily pools in yards.

*Utricularia inflata* Walt. Found in sections 4A, 4, 4B, 1, and 2, and will grow anywhere a water garden is maintained. It differs from the first species in that it has quite large inflated leaf stems and produces a spike which bears several yellow flowers at least one-half inch across. This plant is common in the fresh water swamps and marshes of the eastern part of the state. It is easily propagated by carrying the plants which, when wrapped in paper, can be transported for several days without injury to the plant. In collecting for replanting, masses of the plant should be scraped from the surface of the swamp, put into a paper sack, and when the new location is reached spread out about the same thickness on the mud or water location. This plant bears large flowers and is adapted for cultivation as an ornamental.

#### OROBANCHACEAE

*Orobanche ludoviciana* Nutt. Louisiana Broom Rape. A very peculiar parasitic plant found in sections 4A, 4, 4B, 5, 6, and probably elsewhere. This plant is parasitic on the roots of desert shrubs. As a curiosity it is one of the finest plants to grow. To obtain this plant, one must find a colony, procure the seed of the parasite, and plant it in the shade of the same species of plant on which this parasite grew. The parasite is to be looked for in sandy lands under the shade of small bushes. It grows to a height of six to eight inches. The plant is about one-half of an inch in diameter, yellowish in color, and bears very peculiar red to purple flowers. To those wishing to experiment with plants, this is an interesting one.

#### BIGNONIACEAE

*Bignonia capreolata* L. Cross Vine. Not uncommon in sections 4A, 1, and 2 and will grow in 4 and parts of 3 and 5. A tall prolific vine with smooth green bark and bearing very numerous lanceolate leaves about two inches in length. Through the summer it bears large numbers of clusters of short trumpet-shaped flowers which are about two inches in length and one and one-half inches across the mouth. The flower is yellow on the outside and red on the inside. It is a very handsome and desirable vine. It is hardy and will grow wherever planted. The species gets its name from the fact that a cross section of the vine no matter how large or small shows a cross of hard cells in the wood. This makes it easy to identify even from the dead wood. Commercial.

*Campsis radicans* (L.) Seem. Trumpet Creeper. This well-known hardy vine growing throughout sections 4A, 4, 4B, 1, 2, 3, 5, and some places in 7A. It has so many different names that it is necessary to adopt one and discard the rest. The vine is called Cow Itch, as many people sup-

pose it is poisonous to cattle. The technical name of the plant has been changed every time a new list has been published. It is hoped that the technical and common name here proposed will become standard. To grow this vine one should either take a water sprout from nature or plant the seed. It is probably best to plant the seed and trim the young plants to shape. As a vine it will put out numerous water sprouts unless it is allowed to have one tall growing stem. It should be more widely used than at present because of its ability to stand up and bloom through the hot dry summers.

*Catalpa bignonioides* Walt. Catalpa. This tree is found growing wild in sections 1 and 2. Whether or not it is an escape is not known; however in that part of East Texas as well as in all of the rest of the state, this form of Catalpa should be extensively grown because of the beauty of the flowers and leaves. Commercial.

*Catalpa speciosa* Warder. Western Catalpa. This species is reported to be growing wild in section 1 and will give good results all over Texas. It, however, does not produce as good looking trees as the above species. Commercial.

*Chilopsis linearis* (Cav.) DC. Desert Willow. A willow-like plant with linear leaves, dark green bark, and producing throughout the summer, numerous trumpet-shaped flowers which are white and spotted with purple. The flowers resemble those of Catalpa. In its natural habitat in the western part of Texas it grows as a shrub some six or eight feet high. In eastern Texas and where it is grown under cultivation, it assumes the dimensions of a forest tree sometimes being six inches through and thirty feet high. This tree makes a very desirable one for yard planting, and if it is pruned so that it may have new wood every few years, it will produce a succession of beautiful white and purple flowers. It is a very desirable tree for every purpose. Commercial.

*Tecoma stans* (L.) Juss., var. *angustifolia* Rehder. An annual or perennial straight-growing plant reaching a height of four to ten feet, covered through the summer with large trumpet-shaped yellow flowers. The plant is native in Trans-Pecos Texas but is in cultivation so widely that it is known that it will grow anywhere in the state. In the Lower Rio Grande it becomes tree-like, while in the northern part of the state it acts as an annual and must be replanted every spring. It will well repay the gardener to propagate this species. Commercial.

### ACANTHACEAE

*Anisacanthus Wrightii* (Torr.) A. Gray. A shrub with brown bark and thin bright green leaves, bearing through the summer a profusion of red tubular flowers. The flowers, about one and one-half inches long, make this bush very desirable. It is native in sections 4A, 4, 4B, 2, 3, and 5. This shrub is well adapted for a specimen plant in yards, parks, or along roadsides and as hedges, since it can be pruned to shape. Following rains it produces an abundance of bright red flowers.



*Beleperone comosa* Nees. A very showy prostrate vine-like plant native to the Lower Rio Grande. It is known in cultivation throughout the state. The green mint-like stems are tipped through much of the year by purple and crimson clusters of bracts and flowers which make the plant very attractive in windowboxes, hanging baskets, and for borders for flower beds. Commercial.

*Dianthera americana* L. Water Willow. A very peculiar upright-growing plant with blue green foliage. It reaches a height of from ten to fifteen inches. The leaves are lanceolate and stand upright at the side of the stalk. Through the summer it bears peculiarly shaped white and blue flowers. This plant has a place in every water planting whether the water be running or still. In the southern part of Texas the plant blooms throughout the year. In the northern part it blooms from April until November. It should be propagated by root cuttings which can be found in almost any piece of water in the state.

*Ruellia ciliosa* Pursh. var. *humilis* Britton. Hairy Ruellia. A small low-growing plant with woolly leaves, bearing pale blue flowers sometimes two inches in length. The flowers open at night and fall early the next morning. The plant is found throughout the state of Texas; it grows from underground root stalks, and where it occurs in numbers, is a very desirable plant in a bed which is made up of those species which bloom altogether on cloudy days or at night. Easily propagated by root division.

*Ruellia Drummondii* (Nees) A. Gray. Wild Blue Petunia. An annual from a perennial root stalk found in sections 4A, 4, 4B, 3, and 5. Where a perennial plant is needed for mass beautification this species is one that should be used. It will maintain itself in the open for years with no care save that of protection from stock. It is most easily obtained by collecting the seed in August and September and immediately sowing the seed where the plants are desired. It will grow in dense shade but prefers rather open timber and well-drained hillsides. The seed can be procured from dealers. All Ruellias go under the name of Wild Petunias; however they are not closely related to the genus Petunia.

*Ruellia nudiflora* (Engelm. and Gray) Urban. Tall Ruellia. A smooth green plant growing to a height of eighteen inches to three feet, bearing through the summer numerous light blue tubular flowers. The tube is often one and one-half inches long and one inch across. This plant comes from a perennial root system. It can be procured by making root divisions. Where the plant is given protection and cultivation, it makes a most beautiful yard plant as the clusters of green leaves, topped by large purple flowers, are very showy. It will grow anywhere in the state of Texas where planted.

*Ruellia strepens* L. Smooth Ruellia. Very similar to *Ruellia nudiflora*; however neither the plant nor flowers possess any wool. This plant like the other can be propagated by root division and they make good companion plants. The flowers of this plant are red. These are valuable for park and roadside work. They are natives of the eastern part of Texas but will grow anywhere in the state. Commercial.

*Siphonoglossa Dipterocanthus* (Nees) Heller. A perennial herb native to sections 2 and 3, and parts of 4B. It will grow wherever planted. It consists of stems which are green and bear many small ovate leaves. Throughout the entire year, it bears numerous red purple tubular flowers about one-half inch long. As a perennial border plant in a yard, there is no better species. It also has a place in a rock garden and for plantings around lily pools, where it makes double its normal growth. The plant can be grown from seed or transplanted from the wild.

*Siphonoglossa pilosella* (Nees) Torr. A perennial herb found in sections 4A, 4, 4B, 3, 5, and 6. Low-growing perennial, resembling a mint and bearing throughout the summer clusters of tubular flowers about three-fourths of an inch long. The tubes are split into lips which are variously divided. The plant occurs in a variety of color from pure white to deep blue. This plant is valuable as a border for park and roadside work and acts as a soil binder. It produces a profusion of flowers throughout the summer.

*Thunbergia alata* Bojer. Found in section 2 and grows in cultivation in every section of the state. The plant is a small vine, growing to a height of six to eight feet, having small triangular leaves, and bearing throughout the summer numerous trumpet-shaped yellow flowers one and one-half inches across which are peculiar in that they have black centers. The flower is followed by a seed pod which has a projection resembling the open beak of a bird, whence comes the Latin name. When once planted, it will maintain itself either by seed or from the old root stalk. A fine plant for yards and small trellises. Commercial.

### RUBIACEAE

*Cephalanthus occidentalis* L. Button Bush. One of the most widely distributed shrubs in Texas, as it is found in every floral division. Where moisture and warmth are common, the plant grows to be a sizable tree. In other sections it grows as a small-sized perennial shrub. It will grow either in moist localities or in soft soils. It bears a profusion of globular small heads which are white when they first open, afterwards turning brown. These heads consist of many small flowers and are extremely attractive to butterflies. The plant blooms throughout the hottest part of summer, making this one extremely valuable in park, roadside, or water plantings. It can be grown from water sprouts, cuttings, or seed. Commercial.

*Diodia virginiana* L. Large Button Weed. Found through the eastern half of the state, growing along water courses and in marshes. It is perennial aboveground. The stems are square, bright green, and adorned with opposite leaves, in the axils of which are borne small red flowers which are followed by red seed capsules. As a species for water plantings, no matter whether the water is a roadside ditch or stream, this plant is more attractive than the ordinary ditch weeds.

*Houstonia humifusa* A. Gray. Pink Houstonia. Found in sections 4A, 4, 4B, 3, 5, and probably elsewhere in the state where sandy soils prevail. The plant blooms through a period of about three weeks in March or

April. The plant is an equally-forked, much-branched herb growing to a height of about four inches. The double division makes the plant flat topped and during the blooming season is covered by numerous pink flowers about one-third of an inch long. In sandy soils where this plant grows abundantly, it is a most beautiful sight. The seed of the plant can be obtained by pulling the stems as soon as the flowers have disappeared. The seed should be planted the next November on well prepared sandy soils where there is some shade, and a good bloom can be assured. This is a fine plant for park work in sandy soils, as when once established, it will perpetuate itself. This plant seemingly is one that should have been brought into cultivation, but as yet has not been used. The seed should be made available by dealers.

*Houstonia minima* Beck. Found in sections 7, 7A, 4A, 4, 4B, and 2. This is the smallest showy plant in Texas. The plant at the time of the first bloom consists of a stalk about one-eighth of an inch long, a pair of ovate leaves about one-sixteenth of an inch long, and a flower at least one-fourth of an inch long. The flower is pale blue. New shoots arise from the axils of the leaf and the plant continues to grow, putting out leaves in every division for a period of a month, at which time the plant has reached a height of at least four inches. This minute, blue-flowered plant is found in damp locations in early spring. It can be propagated by collecting the tiny seed pods and planting these in November or December in very small but well-prepared spots in rock gardens. This plant should recommend itself to anyone who wishes the odd and interesting in floriculture.

*Mitchella repens* L. Partridge Berry. A small vine-like herb found in sections 1 and 2 but will grow under cultivation almost anywhere. It is a favorite of window gardeners in the East. It is a prostrate vine, bearing opposite ovate leaves, and at the ends of the stems, producing twin tubular flowers which are about one-half inch long. Following these, red berries are developed which show two flower scars at its surface, thus giving the common name of twin flower to this plant. Commercial.

## CAPRIFOLIACEAE

*Lonicera sempervirens* L. Evergreen Coral Honeysuckle. A bush honeysuckle native to sections 4A, 4, 4B, 1, 2, 5, and 6; also grows wild in sections 7, 7A, and 3. The plant bears numerous dark green, smooth leaves; throughout the summer it bears spikes of ordinary red honeysuckle flowers which are followed by clusters of bright red berries. This plant is of sufficient value to pay for its propagation. It should find a place in roadside and park work where an evergreen vine is needed. It should also be planted in yards. Commercial.

There are four other species of *Lonicera* which grow wild in the state but probably have escaped from cultivation. Where honeysuckle vines are desired it is much better to take vines which are known to persist without care. It is to be remembered that all honeysuckles do better if the old wood is removed at least every two years.

*Sambucus canadensis* L. American Elder. A tall-growing shrub that is found in sections 4A, 4, 4B, 1, 2, 3, and 5. While it prefers moist and shady places along the water courses, it will grow with profusion anywhere in the state. It is peculiar in that it has a weak stem, a large pith center which has made this plant famous as a supply for spiles in the maple sugar groves and as pop guns for boys. The tree sometimes grows to a diameter of better than two inches and the pith cavity is better than one-half of an inch in diameter. The leaves which are opposite are very large and pinnately divided. At the ends of the branches throughout the summer, large clusters of small white flowers are formed which are followed by red berries. Elder is one of the most popular plants in waterside and park work throughout the United States. It can be grown by securing water sprouts or grown from seed. It requires four years from seed to the first flowers. The plant is recommended for roadside work where the road transverses low, wet regions. It should find a place with every water planting in parks. As a specimen plant for yards, it is admirable.

*Symphoricarpos orbiculatus* Moench. Coral Berry. Found in sections 4A, 4, 4B, 1, and 2. A withe-like plant growing to the height of eighteen to twenty inches and bearing a cluster of small white flowers followed by numerous red berries. This plant has been so widely used by landscape gardeners that it needs neither comment nor recommendation.

*Viburnum rufidulum* Raf. Black Haw. Found in sections 4A, 4, 4B, 2, and 5. A small tree with green, ovate, large, smooth, reddish-brown stems bearing in early spring a cluster of white flowers which are followed by the well-known black haws in autumn. Because of its neat appearance the black haw is an ornamental tree for any kind of planting. It is of slow growth and long life. The white flowers which are among the first to appear in the spring make it desirable, and the clusters of pink to dark blue berries in the fall make it equally ornamental after the leaves have fallen. Commercial. There are three and probably four other species of *Viburnums* that occur within the state. It is also possible that the name here used is applied to two distinct species. This almost unknown plant should receive the attention not only of landscape gardeners but of students of botany.

## VALERIANACEAE

*Valerianella amarella* Krok. Corn Salad. A small but beautiful annual found in sections 4A, 4, 4B, 2, 3, and 5. This plant is found throughout early spring in moist and shady places where sometimes there are hundreds of acres of this plant in the shade of trees, particularly cedars. It grows to the height of about six inches, is flat topped, and bears numerous peculiar white flowers. This is the lamb's lettuce of the comic strip. As a plant for park or roadside work where moist and shady conditions exist, it is one of the best for mass plantings. The seed should be collected in July by harvesting the dying annual plants.



## DIPSACACEAE

*Dipsacus sylvestris* Huds. Card Teasel. A very tall thistle-like plant found in section 1 and will grow under cultivation in favored localities in sections 7, 7A, 4A, 4, 4B, 2, and 5. The plant is an annual, grows to the height of seven to ten feet, and produces numerous large thistle-like heads at the ends of branches. It has opposite lanceolate leaves sometimes ten inches in length. The flower clusters are from two to three inches in diameter and three inches long. When in bloom the flower cluster is yellow. The seed soon drop from the head. Each individual flower bears as a bract a long spine-like projection which gives the flower head the appearance of a hair brush. The flower head including the spines is very hard and stiff. These seed heads were used in the early days to tease or lift the nap of the freshly woven woolen cloth, which gives the plant its common name. As a spectacular annual plant this is without an equal. The seed should be sown in November and if shade and moisture are present, in October of the next year these enormous plants will be abundant. This plant should be tried in all park work where moist and shady conditions exist. Commercial.

## CUCURBITACEAE

*Cucurbita foetidissima* H. B. K. Wild Gourd. This strong-smelling wild gourd which arises from a heavy perennial root stalk is a plant that has much to recommend it in many lines of work. Because of its endurance of drought it is a fine plant to use in places where little moisture is available. The plant can be utilized in road work to cover rock fills and other unsightly places where a green cover is needed, as the vines grow to a length of twenty feet or more allowing the perennial root to be at some distance from the place to be covered. Where the plant is given protection in park work or in yards, the unsightly dying vines removed, and given some attention if attacked by insects, this vine will serve better than any common perennial vine.

*Cucurbita Pepo* L. Wild Pumpkin. A little-known but useful vine. It is definitely a miniature pumpkin. It is found native throughout central Texas where it grows along water courses and its vines climb to the tops of the tallest trees. It bears definite pumpkins which are about two and one-half inches in diameter. As this vine can withstand heat, where a quick cover is needed for a trellis or to produce shade, this plant is excellent. The pumpkins sowed in March will give a heavy vine cover throughout the entire summer. This vine does not have an objectionable odor. It is a matter of interest that some horticulturists think that this is the grandfather of all pumpkins; others that it is the resultant cross of all of the cultivated species.

*Ibervillea Lindheimeri* (A. Gray) Greene. Wild Balsam Apple. A little known beautiful ornamental found throughout sections 7A, 4A, 4, 4B, 3, and 5. The plant grows from an underground tuber from which in early spring a small vine very similar to the cultivated watermelon rises, climbs to the height of three to four feet, and produces numerous



small yellow flowers very similar to the cultivated watermelon. These are followed by fruits one inch in length and while green are miniature watermelons but by the middle of summer they turn bright red and attract the attention of everyone as they hang in clusters. This plant is not poisonous as is commonly supposed. It is easily obtained by digging tubers in the wild. The ordinary vine will form one to twenty of these large tubers and it does not endanger the plant in the wild to dig tubers in order to establish new colonies. As an ornamental for a trellis or to grow on a rock bluff there is no better species.

*Melothria pendula* L. Creeping Cucumber. A very dainty vine found wherever shade and much moisture exist. The leaves are about one inch across, five pointed, and borne on almost wire-like stems. It produces numerous small yellow flowers which resemble small watermelons about one-half inch in length. Where the vine is grown on a trellis, it is very ornamental. It is an annual or perennial and is easily obtained by planting the fruits. As a background in a water planting, this species is fine.

### CAMPANULACEAE

*Specularia biflora* (R. and P.) F. & M. Small Venus' Looking Glass. A peculiar plant common to sections 4A, 4, 4B, 1, 2, and parts of 3 and 5. It occurs anywhere the land is protected from cattle. The individual plant consists of an upright stalk, which bears in abundance opposite, ovate leaves. In the axils of each, two blue, five-pointed flowers are borne. This plant commences to bloom in early spring and blooms for a period of approximately two months. A start of this species can be obtained by collecting the dry stems and threshing the seed which should be planted in October or November. Where moist and shady conditions exist in parks, this plant should be used.

*Specularia perfoliata* (L.) A.DC. Venus' Looking Glass. A plant found in almost all sections; resembles the last species but grows taller and the leaves are mostly joined at their base. In this cup formed by the junction of the two leaves, a pair of bright blue flowers is borne. As the stem increases in height the flowers continue to bloom. Growth lasts until the dry weather of midsummer puts an end to the plant. Like the other species this plant is easily obtained by collecting the seed. It is recommended for yard work where it should be planted as a background of a house or fence.

### LOBELIACEAE

*Lobelia cardinalis* L. Cardinal Flower. This plant grows in every section of the state wherever moisture and shade occur. In sections where it does not frost, it reaches a height of eight to ten feet. It bears throughout summer numerous scarlet flowers which are one and one-half inches in length. This species is easily raised from seed or by root divisions. It should be cultivated wherever shade and moisture occur. Along water-

fronts where the plant has some protection until it has established itself, it will grow in the open sun. In certain localities in the state this plant could be utilized for roadside work with a great deal of satisfaction as it would grow in the edge of running streams or where springs exist by the side of the road.

*Lobelia Halei* Small. Great Blue Lobelia. This is a companion plant for the cardinal flower, having the same growing habits and growing to the same size; but the flower is larger and blue. A group of these two species in water plantings makes a very beautiful combination and will amply repay any gardener who takes the pains to obtain and grow them.

### COMPOSITAE

*Achillea Millefolium* L. Yarrow. Found in sections 7A, 4, 4B, 1, 2, and parts of 3 and 5. This plant was probably introduced into Texas many years ago as it is one of the European medicinal plants. Its first appearance is as an early winter rosette of green fern-like leaves, but by spring this rosette has become quite large, reaching a diameter of eight or ten inches. From this cluster arises fruiting stalks up to three feet in length. These bear a few pinnately divided fern-like leaves and a cluster of small white composite flowers. The cluster is about two inches across and the flowers are all on the same level. The plant has a medicinal odor. This is the yarrow of literature and is most common throughout the Eastern United States and Europe. It will grow anywhere in Texas. Commercial.

*Actinea acaulis* (Pursh) Spreng. Stemless Actinea. A most beautiful plant which should be cultivated in every rock garden in the state of Texas. It consists of a short but heavy underground root stalk and produces at various times through the summer a composite flower with pale yellow petals ornamented by fine brown lines parallel with the length of the petals. The center of the flower is small and dark yellow. The plant has but few linear leaves which lie flat on the ground. The flower which is one and one-half inches in diameter has no stem and apparently lies touching the ground. This plant is found in sections 7, 7A, 5, and 6, and will grow anywhere planted, as it has been introduced and is profitably used in Alpine garden work in Europe. This plant should be made available by dealers in the United States. The seed can be purchased from dealers in Europe. So far there is no dealer in the United States offering the seed of this plant for sale.

*Actinea odorata* (DC.) Kuntze. Western Bitter Weed. Found in sections 7, 7A, 4A, 4, 3, 5, and 6. If it were not for the fact that this plant is poisonous to cattle and is very abundant, it would be widely cultivated as an ornamental throughout the western part of Texas. The plant has in its favor the fact that it can look prosperous under the most adverse conditions. It always has a bright green appearance and bright golden flowers. The odor from them is pleasing. In sections especially in parks

and along roadsides in parts of the country where range is not depended upon, this plant should be used. It makes an especially beautiful cluster of yellow flowers in a yard.

*Actinea scaposa* (DC) Kuntze. Stemmed Actinea. Found in sections 4A, 4, 3, 5, and 6. The plant consists of a rosette of linear gray leaves bearing throughout the summer leaflets three to five inches in length, topped by a single bright yellow composite flower. So far as known this plant does not occur in sufficient quantities to be dangerous to livestock and is a beautiful ornamental along roadsides, and in parks and yards. The seed can be procured from the wild by gathering the ripened flower heads.

*Ageratum corymbosum* Zuccag. Purple Boneset. A perennial weak stemmed shrub occurring on the Gulf Coast from Corpus Christi inland through section 3 in suitable locations. The plant is a most beautiful shrub, covered by triangular leaves which are a bronze green in color with pebbled surfaces. It bears clusters of purple to blue composite flowers without rays. Throughout the entire year the plant is easily obtained by cuttings, root divisions, or seed. It should be very largely planted in yards and parks and on roadsides in the southern parts of sections 4A, 4, 4B, 2, 5, and everywhere in 3. This plant, however, requires some moisture and shade. Commercial.

*Amblyolepis setigera* DC. A daisy-like plant bearing smooth blue green leaves and reaching a height of fifteen inches. Throughout spring this plant produces a wealth of yellow daisy flowers more than one inch in diameter. The flowers are not only beautiful but have a pleasing odor. The color and the fact that bees work it abundantly give it the common name of honey daisy. This plant is native to sections 7, 7A, 4A, 4, 3, 5, and probably everywhere else in the state. This plant should be used very widely in roadside and park work as it gives a fine cover and blooms throughout more than a month in spring. It sufficiently disappears that other native plants can occupy the territory during the summer and fall. It will re-seed itself and needs only protection from livestock. If one wishes a particularly fine bed, the young plants must be thinned to six inch squares in early spring. Commercial.

*Aphanostephus skirrhobasis* (DC.) Trelease. The large White Daisy. A very common plant in sections 7A, 4A, 4, 4B, 1, 2, 3, 5, and probably occurs in 7 and 6. This is a large white daisy which is more common in sandy soils than elsewhere but is common in every section. This plant under cultivation and protection grows taller and blooms through a longer period of time than its wild neighbor. The plant when cultivated in a yard will continue to bloom from the first of April until the first of August and again, if moisture is abundant, from September until November. This large white daisy should be widely planted along roadsides and in parks.

*Aphanostephus humilis* (Benth.) Gray. Similar to the above species but the flowers are only one-half the diameter. The ray flowers are white, pink, and purple in contrast to the pure white of the larger species. This

plant is the most abundant composite in sections 7, 7A, 4A, 4, 4B and 5 and occurs in parts of 3. This small-flowered composite grows in such heavy populations that it presents a solid field of white where protected from livestock. It can withstand heat and drought and does well on poor soils. It has a distinct value in sections where adverse conditions make the raising of flowers a task. The seed can be collected from the wild by pulling the ripened heads.

*Aplopappus megacephalus* (Nash) Hitchc. Large flowered *Aplopappus*. A most beautiful composite growing in sections 2, 3, 5, and 6. The plant consists of a heavy stem reaching the height of two to three feet. It bears abundant green leaves which are toothed and also many clusters of yellow flowers about three-fourths of an inch in diameter. This stem arises from a perennial root. The stems occur in clusters of from fifteen to twenty. The plant prefers soft soils with considerable moisture but without much shade. This plant makes a fine roadside ornamental as it will bloom through a period of two months each year. In a yard it is a most beautiful specimen plant, as under cultivation and care it will grow to the height of three feet and produce more abundant flowers than in nature. In park work this plant should be given a place along waterfronts. There are eighteen other species and varieties in this genus, all of them perennial plants coming from a heavy root stalk, growing in clusters, and producing, in summer or fall, dense clusters of composite flowers of various shades of yellow. All of these plants are candidates for a place as ornamentals where it is desired to adorn parks, roadsides, or yards with plants which will take care of themselves and will live through periods of time.

*Arctium minus* Schk. Burdock. A most peculiar composite which is an introduction to Texas. It is, however, sparingly distributed throughout the northern parts of 7, 4A, and 4. As a specimen plant, this is spectacular. It is an annual under optimum conditions but as a rule requires about four years from seed to seed. To obtain the plant, seed should be procured and planted in the fall of the year on a piece of land where the plants are to be grown. As soon as the seedlings come up, they should be thinned to foot squares. The next spring these seedlings should be set out not closer than three feet apart. The rosettes continue to grow throughout the first summer. The plant much resembles cultivated rhubarb; however the stems and leaves are covered with white wool. In good soils and during a good year these leaves sometimes reach a length of two feet, making a rosette which is very attractive. During the lifetime of the rosette a heavy tap root is developed that goes sometimes to a depth of six to eight feet in the soil. When the plant has reached its full maturity and correct weather conditions exist, a stalk covered with wool sometimes three inches in diameter at the bottom will arise from the rosette, and bears a few triangular leaves. At the height of from four to six feet, the stem gives rise to a number of clusters of peculiar purple tassels which as the seed commence to ripen will turn the soft bracts into hooked hard spines, giving the name of burdock to this plant. As the seeds ripen they utilize all of the stored



food in the plant. At that time it is possible with little exertion to pull one of these enormous plants from the soil as the woody deep root breaks loose from the bark. In the Central states, where this plant is considered a weed, advantage is taken of this fact and at that time of year these huge weeds bearing the unripened seed are pulled from the ground, dried, and burned. Recommended for a specimen plant in yards and collections of choice plants.

*Artemisia dracunculoides* Pursh. Sage Brush, Wormwood. A weed-like evergreen shrub covered with numerous linear leaves. Found everywhere in the sand hills and in places in hard lands of sections 7, 7A, 4A, 4, 4B, 5, and 6. This is one of the sagebrushes of literature and is one of the plants that have put an end to the Great American Desert. All of this genus can endure sand dune conditions and have gradually encroached on the blowing sands until in places sand dunes have ceased to blow. The plant is utilized somewhat by cattle, but as a roadside ornamental, a sand binder, and a specimen plant in yards, this sagebrush has vast possibilities. It can be easily procured by obtaining root divisions.

*Artemisia mexicana* Willd. Wormwood. This is the common wormwood or dusty miller found throughout sections 4A, 4, 4B, 2, 3, 5, and 6. It likes soft soils and some shade. It grows from a perennial root mass and in clusters, some of these occupying at least one acre of ground. Throughout the summer the plant is a mass of silver gray, the stems reaching a height of about two feet. In fall it puts up numerous very small flower heads which are later followed by the clusters of snowy white tassels. The leaves of this species have long been used as a medicine under the name of wormwood. The plant is also a favorite with the makers of cut-flower bouquets, as it forms sprays of silver gray which stand up very well with cut flowers. The plant is easily obtained and easily grown. All that is necessary is to get a section of the root and plant it. After that, all that is needed is protection from livestock. There are seven other species of sagebrush in the state of Texas, all of which have the same properties, the same values, and are called by the same name. All should be utilized for their ornamental and protective values.

*Aster Wrightii* Gray. Found only in section 6. So far as known it has been brought into cultivation only at ranch houses in that section. It is one of the most beautiful of the aster family. The plant is low growing, being not over a foot in height, the flowers reaching the diameter of almost two inches. The ray flowers are from white to purple with a yellow center. This species blooms throughout the middle of summer. It can withstand much drought and blooms in the open sun. The plant is a perennial and grows from a heavy root stalk. In the places where the plant has been brought under cultivation the root clusters have been transplanted. This is a most beautiful plant as the leaf bracts around the flowers and the flowers themselves are extremely pleasing. Someone should make this species available to the public.



*Aster spinosus* Benth. A very peculiar plant seldom recognized as an aster. Through most of its life it bears no leaves but large numbers of long slender green branches. In the late fall some few clusters will bear numerous small white aster-like flowers. The plant receives its name because there occur a few sharp spines at the base of each of the main stalks. This plant is one of the best native species for erosion control. It can be started by root divisions and when once started can withstand any kind of erosion. It should be used around the ends of abutments of bridges and other places where erosion from rains occurs. The plant makes an excellent hedge along banks of ravines and other places where something to hide unsightly places is needed which is both beautiful and will hold together eroding soils around walls.

*Aster tanacetifolius* H. B. K. Tansy Aster. Found in sections 7, 7A, 4A, 4, 5, and 6. An aster which grows abundantly throughout the most of western Texas. It commences to bloom in early spring and continues throughout the summer. It is a perennial rising from a heavy root stalk and bears a cluster of thick stems about a foot high. These are covered with shiny, divided, dark green leaves. The flowers are about three-fourths of an inch in diameter, purple with a yellow center. This plant is one of the most dainty and most showy plants in the plains country of Texas. It is easily transplanted from the wild by means of root divisions. In many towns in sections 2 and 3 this has been planted along walks and in beds in yards, where under cultivation and protection they reach almost twice their normal size. This is a very desirable plant and should be made available. There are fifty-four other species of aster which bloom in the state of Texas, among which are many that are already used for ornamental purposes and many more that should be tried out. Anyone wishing to do original work with the cultivation of wild flowers should attempt the cultivation of all of the species of aster in his immediate neighborhood. The ones that have been tried have amply repaid for the labor used in securing them. The more showy species are desirable stock for exchange or sale.

*Baccharis angustifolia* Michx. Found in sections 4B, 2, and 3. A low-growing perennial shrub reaching a height of more than two feet, bearing very numerous needle-shaped leaves about two inches long, and during a portion of the year small yellowish composite flowers. This plant is very common along the Gulf Coast and in the Nueces Valley. At times the leaves are somewhat sticky with a resinous substance. As a low hedge plant to be used either for ornament, windbreak, or protection from poultry, this shrub has a place. It is easily transplanted from the wild or can be grown from the seed. When grown from seed and cultivated, the plants grow straight, taller, and more vigorous than in the wild. This shrub has a place for roadside work, in that it will not only hide rough soils, but will tie-together heavy sands and eroding sections. Attention is called to the fact that the name of this species has been applied by horticulturists to *Baccharis neglecta*, which does not occur in the same locality and which is the common *Baccharis* of sections 7A, 4A, 4, 4B, and parts of 2.

*Baccharis halimifolia* L. Groundsel Tree. A very peculiar bush growing to a height of about five feet, extremely common to the Gulf Coast where it grows under the name of false willow. In the fall of the year the flat tops of the plant are yellow with the small clustres of composite flowers and afterwards white with the ripened seeds. A few plants of this species exist in sections 4A, 4, 4B, and 1, and where they grow on upland they develop a woody shrub sometimes ten feet in height and having a diameter of two inches. The plant is told from other species by the almost triangular leaves bearing two or more tooth-like projections. This plant is recommended for use anywhere in sections 4, 4B, 1, and 2, or the eastern parts of 3 where a heavy thornless hedge is needed. This plant is good for the control of blowing sands and washing of soils along flat lands of the Gulf Coast.

*Baccharis neglecta* Britt. Linear-leaved and the most widely distributed species in the state. It has increased very heavily in distribution and population during the last twenty years. It is the first invader on abandoned farms and pasture lands. It does better in sandy soils than hard, but will grow anywhere. The plant has a number of valuable uses. For roadside work it can be used to great advantage to guard the ends of culverts or other places now commonly guarded by cement or wooden posts. *Baccharis* is evergreen and grows to quite a height. It will attract more attention than a wooden post and is beautiful besides. Should a car hit the obstruction the very pliable shrub will in no way injure the car and will probably ease it over the obstruction. It will not hurt the plant as it recovers very rapidly from ill treatment. For a hedge to hide any kind of a background, this is one of the best materials. Around recreation buildings especially in parks and in wayside parks where evergreen hedges are needed to hide unsightly outbuildings, this is an ideal plant. It can be obtained most easily by transplanting the numerous seedlings which are found around the old plants. When cultivated, it will grow to a fine hedge the first year. To perpetuate a hedge of this plant the old wood should be removed at least every two years.

*Baccharis salicina* T. and G. Willow *Baccharis*. A species which is confined to sections 7, 7A, 5, and 6 where it is the most common green shrub throughout the year. It is found only along water courses and in moist places. It very closely resembles willow and grows to a height of about three to four feet. This species like *neglecta* is being used by the residents of its habitat as hedges around yards and for backgrounds for flower beds. The plant is especially valuable as it is a native to the country where tumbleweeds abound, and a yard with a hedge of this plant will stop the tumbleweeds from coming in. It also binds loose sandy soils and helps in the control of wind erosion.

*Baileya multiradiata* Harv. and Gray. Yellow-flowered composite found in sections 4A, 4, 3, 5, and 6. A low-growing perennial the stems of which bear numerous linear leaves and stalks, each of which produces a yellow daisy-like flower about three-fourths of an inch in diameter.

This plant blooms throughout the year whenever weather conditions are favorable. In many places it has been transplanted and grown under the name of yellow daisy. It has possibilities for gardens which are to be planted with perennial ever-blooming flowers.

*Berlandiera lyrata* Benth. The Lyre-leaved *Berlandiera*. The low-growing, daisy-like plant consisting of a rosette of lyrate leaves found in sections 5 and 6 and also in parts of 7A, 4, 4A, and 3. It bears at various times during the summer a stalk about eight inches high, bearing from three to five peculiarly constructed daisy-like flowers. The head of this composite is extremely flat. The large green bracts which are under the purple flower make this bloom very conspicuous. The plant can be grown from seed or transplanted by root divisions.

*Berlandiera texana* DC. *Berlandier's Daisy*. Found in sections 4A, 4, 4B, 1, 2, 3, and parts of 5. A plant consisting of a rough stem reaching the height of three to four feet, bearing rough ovate leaves and at times throughout the summer, clusters of yellow, flat, daisy-like flowers. This is one of the peculiar and attractive daisies of Texas. It should receive a place in collections of plants, especially in well-kept parks and yards, where this plant should be grown, as it was named for one of the botanists collecting in Texas many years ago.

*Bidens aristosa* (Michx.) Britton. *Boot Jacks*. A very beautiful annual growing to a height of five to six feet, bearing in late summer a wealth of sunflower blooms nearly two inches across. The plant is found abundantly in moist localities in sections 4A, 4, 4B, and 1. It is a good honey plant and a fine ornamental. The only objection is the peculiar boot jack-shaped seed the arms of which are covered with spines by which it fastens itself to the passer-by, to secure the distribution of the species. Where large areas of waste lands or lands that are subject to overflow exist, this plant will cover the mud flats and hide much unsightly territory. A mass of these plants is a beautiful thing and at the same time makes a good honey plant.

*Bidens bipinnata* L. *Spanish Needles*. A member of this genus that is here mentioned to call the attention of the flower grower to a plant which, if allowed to work into water plantings and covers for overflow lands, may get beyond the control of the grower. The plant resembles the above species in every particular until it comes to the blooming period, at which time the bloom has no showy ray flowers and produces a cluster of slender seed about three-fourths of an inch in length, every one of which is armed by several sharp spines that are barbed. This assures the distribution of the plant and makes it dreaded by those who have to come in contact with it. When this plant is found, it should be destroyed.

*Boltonia diffusa* Ell. *Bolton's Aster*. A plant growing in and around water in sections 4A, 4, 4B, 1, 2 and parts of 3. The plant consists of thick colonies of straight, green-growing stems which are ornamented by lanceolated smooth green leaves throughout the summer and fall.

This plant is covered by small white aster flowers. *Boltonia* has a place in every water planting in the state and probably will grow anywhere planted. It can be propagated either by root divisions or by collecting the seed.

*Borrichia frutescens* (L.) DC. Sea Ox-eye. A composite perennial largely restricted to the Gulf Coast; however it is found in localities in the southern part of sections 4, 4B, and 1, in all of 2, and in parts of 3. The plant grows from a heavy underground root. The woody stems rise to a height of about three feet. The leaves are gray green and succulent. Each stem puts up about the middle of summer a single stalk which develops into stiff hard sunflower-like blooms about two inches in diameter. The strap petals are yellow, the centers brown. This plant should be used abundantly throughout the Gulf Coast and wherever moist, saline soils exist, as a hedge or specimen plant, or for roadside mass work.

*Brickellia dentata* (DC.) Sch.-Bip. A species very much resembling *Eupatorium*. Found in southern parts of sections 4A, 4, 4B, and eastern parts of 3 and 5. The plant is a perennial shrub and bears at times during the summer numerous flowers white to light yellow which resemble those of *Eupatorium*. The plant is admirably adapted for roadside beautification throughout the flat lands of the Gulf Coast and the Rio Grande plains. It has in some places been utilized for yard and cemetery work. It is easily transplanted from the wild. This genus contains nine other species which are widely distributed throughout Texas, some of them in the western part bearing clusters of flowers one inch in diameter. As a genus the plant is perennial, does not become a weed, and can withstand rough treatment. It should be utilized for roadside work and in parks especially where choice clusters of plants are needed.

*Cacalia tuberosa* Nutt. Colt's Foot. Indian Plantain. A most peculiar and little known plant. It consists of numerous tuber like roots from which arise quite thick rosettes of ovate leaves on stems about three inches long. The leaf is supposed to represent the hoof mark of a colt, hence the name. In midsummer this plant puts up a smooth stalk to the height of six to seven feet and bears at the top peculiar yellowish green composite flowers which are afterwards followed by seeds that have long white feathery tassels. Groups of this plant at intervals along roadsides and on the points of hills in parks are very spectacular. This species has been put into use as specimen plants in yards in a great number of towns adjoining the lower Brazos Valley, where they attract much attention. The plant can be grown from seed or dug from the wild.

*Calyptrocarpus vialis* Less. Prostrate sunflower. This plant is given in this list because it is so widespread as a weed in lawns, and few people have any idea as to a name for it. It does, however, have considerable value as an ornamental in park work, especially in lowland and water gardens. In the zone where it is hard to grow anything, the ground will



be covered by this plant which bears yellow composite flowers throughout the year. All that is necessary is to bring a few of the plants and place them in the mud. In large towns where small amounts of ground can be utilized for ornamentals this tiny plant can be given a start and it will reward the gardener by covering up any kind of a pile of refuse. This is perhaps the most widespread weed in towns in the state of Texas.

*Centaurea americana* (Don) Nutt. Sultana Star Thistle. A most beautiful plant growing abundantly along roadsides and in unoccupied lands throughout the southern part of sections 4A, 4, 4B, 1, 2, 3, 5, and 6. The plant is very well known by its huge cluster of pale pink flowers which give the name of Powder Puff to this handsome plant. It is commercial and is pictured in almost every seed catalogue.

*Centaurea melitensis* L. Rayless winged Century. Found in southern sections of 4A, 4, 4B, 1, and 2 and in the northern part of 3 and 5. This is a weed of the first class, given here to call attention to those who are interested in growing roadside plants to the rapid distribution of this one by means of trucks. While the truck is one of the greatest distributors of beautiful wayside flowers it also carries weeds. This plant has in the past three years invaded numerous counties where it never was seen before. It is commonly found along the edge of the gravel on a paved road. It grows to the height of less than one foot. The plant is covered with a gray wool and the stems bear many wing-like fringes. The leaves are lanceolate. Through the summer and fall, it bears numerous flowers or heads which during the middle of the day have a number of tiny yellow flowers protruding from the top. The bracts are extremely hard and sharp, making the entire plant a nuisance as soon as it is dry. Wherever this plant is found growing, it should be immediately cut and burned. Its place should be given over to more desirable species.

*Chrysanthemum Leucanthemum* L. Ox-eye Daisy. This plant is an escape in Texas. It is found throughout sections 4A, 4, 4B, and 1. It is a most beautiful white-flowered daisy and where it is grown under control is a very beautiful ornamental; however in certain sections the plant becomes a nuisance. Throughout the timothy and clover fields of the Mississippi Valley this plant is called white weed. For many sections this white flowered daisy which occurs throughout the year is valuable as a roadside beautifier as it will grow anywhere it is planted.

*Chrysopsis pilosa* Nutt. Golden Aster. A gray green perennial shrub growing in huge clusters about eight inches high from perennial roots. It is found in sections 7A, 4A, 4, 4B, 1, 2, 3, and 5. Throughout spring and summer the tops of these dense clusters of branches are covered by golden yellow aster like flowers about one-half inch in diameter. This plant will grow anywhere and under the most adverse conditions. In many places the walls of rock cuts are a mass of gold throughout the summer because of these plants which grow at right



angles to the perpendicular wall of the cut. They will grow in any kind of soil and can endure much traffic, being found along almost any country road. This plant makes a beautiful border and as a hardy perennial plant for the control of erosion, it should be of considerable value. There are eight other species of this genus which are more or less known in Texas. They are very similar and are supposed by most people to be the same thing. All of them are worthy of a place in cultivation. Those interested in growing wild plants should collect a number of these clusters of *Chrysopsis* in the fall of the year and plant them as a border to a flower bed. The plant will bloom the next year, rewarding the grower with a wealth of gold flowers for a period of at least one month.

*Chrysothamnus pulchellus* (A. Gray) Greene. Rayless Goldenrod. Also called Rabbit Brush. A perennial shrub found only in section 7. It bears numerous linear leaves and throughout the summer produces large clusters of long composite flowers which resemble tassels of pale yellow hair in holders of yellow wax. This plant in full boom is one of the most beautiful of the composites. The plant itself is highly poisonous to livestock, but under cultivation along roadsides it is one of the most beautiful of the native Texas composites. Someone should cultivate this plant and make it available for landscape gardeners. There are three other species occurring in sections 7 and 6. The four species are so nearly alike that it is hard to distinguish between them.

*Cichorium intybus* L. Chicory, Blue Sailors. This plant was introduced to use as a coffee substitute and is one of the most beautiful of the composites. It grows as a prostrate annual and produces through the summer blue flowers almost one inch in diameter. The flower is composed entirely of bright blue linear strap petals, and a cluster of this plant in full bloom attracts the attention of anyone. When grown as a specimen in a yard or roadside park, or for general roadside work, this will attract abundant attention. Commercial.

*Cirsium austrinum* (Small) E. D. Schulz. Red Thistle. This is one of roadside thistles of most of sections 7A, 4A, 4, 4B, 1, 3, and 5, where throughout early summer it covers acres of land with its dull red flowers. The plant has little to recommend it except its beauty and because of its thorns should only be used occasionally as an ornamental. A single specimen in a yard or park where it is trimmed or cultivated is a very beautiful thing. In mass work in roadside beautification, this plant is admirable.

*Cirsium horridulum* Michx. Yellow Thistle. One of the most spectacular plants in Texas. It belongs in sandy loose soils where moisture and some shade exist. The young plant appears during the fall rains where it is protected, and if the rains persist the plant develops an enormous rosette. Early the next summer it puts up a heavy seed stalk to the height of about three feet and generally bears but one enormous head of thistle flowers. Some of these heads are four inches in diameter. The color

ranges from red in sections 4 through pink to white and to yellow in the eastern part of section 1. In case dry weather occurs during the first winter the rosette will often go through an entire year without blooming and, during drought periods, several years. This leads to the finding of rosettes which are three feet in diameter and contain dozens of leaves. These huge rosettes are very beautiful and in certain towns florists make a business of digging them in early spring and transplanting them to the yards of their clients. This huge rosette topped by a four-inch flower is a plant that is worth going miles to see. Wherever loose sand and moisture occur, this plant can be grown. The seed can be removed from the ripened seed pods which are found abundantly in the sandy parts of sections 4, 4B, 1, and 2. There are eleven other species of thistle in the state, most of which very much resemble *Cirsium austrium*. In sections where plantings are to be made it is best to use the plant at hand rather than introduce it from elsewhere.

*Coreopsis cardaminaefolia* (DC.) T. and G. Cress leaf Coreopsis. Found throughout sections 4A, 4, 4B, 1, 2, 3, and 5. This coreopsis so much resembles the cultivated species that it is not necessary to describe it. All of the species of this genus bear flowers which are very similar. They vary only in the diameter of the flower, the shape of the leaf, and numbers in which they are found. Wherever Coreopsis occurs, it should be brought into cultivation.

*Coreopsis nutescens* Heller. Found in sections 1, 2, and 3. This is the most beautiful of all of the native Coreopsis. It has a bright yellow flower nearly two inches in diameter. About half way from the edge of the flower to its center is an irregular line of purple. This plant grows in sandy sections and blooms in early spring. It is known to the school child as sand dollars. The plant was first described from specimens collected in the Nueces River Valley near Corpus Christi.

*Cosmos parviflorus* (Jacq.) H. B. K. Small Pink Flowered Cosmos. Found in sections 7 and 6. This plant should not only be brought into cultivation in its home area but should be made available, as farther east this plant will grow taller and become a standard ornamental. A variety of this species is tall growing and should be tried out for its decorative purposes.

*Dyssodia tenuiloba* DC. Robinson. Tiny Tim. A very small shrub-like perennial herb growing in sections 4A, 4, 4B, and 3. This plant is almost heath-like and after rains bears an abundance of straight stalks about two inches long, topped by bright yellow daisy-like flowers almost one-half of an inch in diameter. In good soils a single plant will produce a compact mass eight to ten inches in diameter and under optimum conditions will bear at one time two to three hundred flowers. The plant grows under the most strenuous conditions. It blooms every month in the year and should be utilized very extensively for rock gardens, border plants, or even pot plants for the house. A single plant of this species grew

as a house plant for three years in Texas and when sent to New York City it lived throughout the first year but died the second because of extreme cold. This plant is recommended to everyone.

This genus contains fourteen species all of which are very similar, varying only in the size of the flowers and leaves, the manner of growth, and forms of the leaves being similar. Wherever one desires a member of this group for cultivation, he should choose the species at hand.

*Echinacea angustifolia* DC. Narrow leaf Cone Flower. A tall showy perennial found in sections 7, 7A, 4A, 4, 4B, and 2. The plant consists of a perennial root stalk which through the fall and winter produces a rosette of lanceolate, very rough leaves about six inches in length. In spring from this rosette arise tall stems to a height of two to three feet bearing at the top the familiar composite head; however the ray flowers are very pale pink and at least two inches long. The center is almost a bur, the tube flowers are so firm. This cluster is about two inches in diameter and is pale purple. This plant has been in cultivation in many places for years. Commercial.

*Echinacea pallida* Nutt. Pale Purple Cone Flower found in sections 4, 4B, and 1. A plant very similar to the above species; however the plant is taller and the petals not so large. This plant is found wherever soft soils exist. Like the other species it has been in cultivation until it can be purchased from dealers.

*Eclipta alba* (L.) Hassk. A very peculiar composite which occurs in moist places or in standing water. Where it is protected it becomes a very ornamental plant, reaching a height of two to three feet. It is covered with green composite flowers with small white petals. This plant should be a part of every water planting as it occupies the zone which is generally bare in water gardens, just between the edge of the water and the beginning of the fairly dry soils.

*Elephantopus carolinianus* Willd. Carolina Elephant Foot. Found in moist woods and along water courses in sections 4A, 4, 4B, 1, and 2. The plant consists of a rosette of spatulate leaves, seven to eight inches long and four inches wide. In summer it bears a much-branched stalk with a flower cluster borne on a peduncle in the axil of each leaf. It has no ray flowers and the tube flowers are purple. The name of Elephant's Foot comes from the bracts which surround the flower cluster. This is a very desirable plant anywhere a water planting is maintained and is equally as useful in shady localities in parks and roadsides.

*Elephantopus tomentosus* L. Woolly Elephant's Foot. Plant closely resembles the above but is covered with wool. Found only in section 6 but will grow anywhere that it is introduced into a water garden.

*Engelmannia pinnatifida* T. and G. Engelmann's Daisy. A very common plant in sections 7, 7A, 4A, 4, 4B, 3, and 5. This plant, which is named in honor of one of the early botanists of Texas, is one of the most widely distributed and best known of Texas composites. It is excellent as a

roadside plant, bearing for more than two months numerous yellow daisy-like flowers with seven or eight strap petals. This daisy can be told from all others by the number of strap petals and the fact that the leaves are pinnately divided. It can be grown from seed or by transplanting. A bed of this composite should exist in every park in the state of Texas in honor of the man who helped make Texas botany.

*Erigeron philadelphicus* L. Philadelphia Fleabane, Wood Daisy. One of the first daisy composites to bloom in spring. Found in deep woods and along water courses. It has a place in every water planting and is easily raised in yards where water is available. It is a perennial and will maintain itself throughout many years. This plant should be brought in from the wild and made a part of small water gardens. There are ten other species of this genus all of which are quite similar. These wood daisies are recommended for those who wish to grow composites that will bloom in early spring. The best known and most common is *Erigeron canadensis* L., which is one of the most common and unsightly weeds of Texas. It goes under the various names of Mare's Tail and Pig Weed. The plant consists of a straight stalk bearing linear green leaves and topped by an unsightly cluster of small yellowish green flowers.

*Eupatorium coelestinum* L. Blue Boneset. An annual from a perennial root stalk growing in moist places and is almost vine-like. The leaves are small, almost triangular, and bear clusters of pale blue tube flowers throughout the summer. This plant should be found, the seed collected and planted in damp locations in parks or along roadsides; and, if one has room in moist locations in yards, the plant will pay for the work put upon it.

*Eupatorium compositifolium* Walt. Yankee Weed. A valuable and peculiar perennial found in sections 4A, 4, 4B, 1, 2, and parts of 3. The plant grows only in soft sandy soils where from early spring until September it appears as a cluster of thick green finely divided leaves. In September it sends up stalks well covered with finely divided leaves which reach a length of eight to ten inches, the stalks rising to a height of four to five feet and in late fall producing a huge tassel of very small Eupatorium greenish white flowers. This plant is one of the Eupatoriums whose flowers have a pleasing perfume. Clusters of these plants will grow in any soft soils and will repay the trouble of the gardener in securing the root cluster. The seeds of this plant should not be disturbed, and new plants should be brought into existence by dividing the old plants. This is one plant that is able to grow and tie together blowing sand dunes, and on places where cattle or early cultivation has broken the ground cover, it offers quick relief from the blowing sands.

*Eupatorium havanense* H. B. K. A perennial shrub found in sections 4A, 4, and 2. It will grow anywhere it is planted and given protection, shade, and some moisture. The natural home of the shrub is in deep woods in the hills of the Edwards Escarpment. In June and again in late fall,

the plant is covered with clusters of white *Eupatorium* flowers. In places where it has been brought into cultivation, this species is considered as being among the most beautiful and graceful of the perennial ornamentals.

*Eupatorium incarnatum* Walt. Pink Thoroughwort. Found in sections 4A, 4, 4B, 2, 3, and 5. A profusely growing member of the species which is vine-like. It grows in great clusters in brush lands. In late October it becomes a huge mass of small white flowers which when mature turn red, giving the name to the plant. This is a very desirable specimen for parks and roads. The plant is inconspicuous during the spring and summer but makes known its presence when it puts up its numerous long slender branches ornamenting the shrubs over which it sprawls. It can be grown from root divisions or seed.

*Eupatorium perfoliatum* L. Boneset. The boneset of medicine. The plant consists of a perennial root stalk which puts up in the early summer a number of straight stems that reach the height of three to four feet, the lower branches being quite large, six to seven inches long and three inches wide, and covered with wool. These have very short stems. As the leaves approach the upper part of the stalk the stems disappear, and the leaves become joined so that the stem goes through the center of the upper set of the leaves. It bears a cluster of typical white *Eupatorium* flowers. This plant is widely known throughout the United States as a medicinal plant. A concoction of the leaves is a standard medicine for any form of malaria. There is a number of other species of this interesting genus, all of which are worthy of cultivation. They are similar in their growth habits and are similarly brought into cultivation. These plants should become the favorite with those who have in charge the decoration of roadsides and large parks.

*Evax prolifera* Nutt. Cud Weed. A very peculiar gray green plant reaching a height of only four or five inches. It bears numerous small composite flowers in clusters of white wool at the ends of the branches. This plant is very desirable as a border plant in yards or in park work. It is especially valuable as it will grow on almost any kind of soil and does most of its growing early in the spring where any plant which will grow in dense masses occurs, thus protecting the ground from blowing and washing. It is very common in all parts of sections 7, 7A, 4A, 4, 4B, and 5. This genus has three other species which are very similar and can be used in a like manner. For one wishing a low-growing plant for a border either in a yard or in a window box, this genus should be looked for.

*Flaveria trinervia* (Spreng.) C. Mohr. A water-loving plant growing in sections 7, 7A, 5, and 6. It is a composite that grows in standing water or marshy lands. It is somewhat red in color, grows from a central stem, and bears numerous lanceolate leaves. In the summer and fall it is topped by clusters of yellow three-cornered pods which look as if they were made from wax. Within these are borne the small composite



flowers. This is one of the peculiar and interesting plants which should be introduced into every water garden. They do not spread rapidly but are interesting and will attract attention wherever found. Where water occurs along roadsides, a good growth is assured for the next year by the scattering of this seed.

*Florestina tripteris* DC. A composite very common in sections 3 and 5. It is biennial growing the first year as a rosette and the second year setting up a stalk to the height of three to four feet. The leaves are three-nerved and sometimes three-lobed. The upper part of the plant bears numerous small white clusters of tube flowers. It is valuable in that it will grow under the trying conditions of heat and drought and has the ability to tie together blowing sands. It should be widely used for roadside plantings in the districts where it is native, and should be tried wherever sandy soils occur.

*Franseria confertiflora* (DC.) Rydb. This plant is a pernicious weed. It grows by underground root stalks making it next to impossible to eradicate. It is probably the most persistent weed in central Texas, where it is known as Small Ragweed. It can be told from the true ragweed (*Ambrosia* sps.) by the fact that its seed pods are burs. In addition to its competition with agriculture, it is also one of the most virulent of hay fever plants. Attention is called to it here because of the misunderstanding through central Texas that this is an *Ambrosia*. There are four other species of *Franseria* in Texas.

*Gaillardia amblyodon* A. Gray. Red Gaillardia. A *Gaillardia* of sections 4A, 4, 3, and 5. The flower is deep red with a very narrow line of pale red or yellow around the edge of the disc. The plant grows to a height of six or eight inches and is very distinct from *Gaillardia pulchella*, of which it is supposed by many to be a variety. Where a park or yard gardener desires a very beautiful bed of spring flowers, one in which all of the *Gaillardias* native to the state exist cannot be excelled. *Amblyodon* is one of the earliest to bloom, is one of the most deeply colored, and must be grown from seed.

*Gaillardia lanceolata* Michx. Yellow-flowered *Gaillardia* found in the same sections with the above; however it has lanceolate leaves and bears pale yellow flowers. It is mistaken by many as a faded specimen of *pulchella*. Under cultivation it shows improvement and brighter colors in the flowers.

*Gaillardia suavis* (Gray and Engelm.) Britt. and Rusby. A peculiar *Gaillardia* found in all parts of the state with the exception of piney woods and Gulf Coast. It grows throughout the fall and winter as a rosette of lanceolate leaves. In early spring it sends up bare stems to a height of eight to twenty-four inches. The flowers are borne in heads of deep red which possess a pleasing perfume. In many sections the bloom consists of red tubular flowers; however on optimum years, or in certain parts of the state, red ray flowers encircle the red center. Like the rest this is a desirable plant and is easily procured by obtaining the seed.

*Gaillardia pulchella* Foug. Indian Blanket, Fire Wheel. The most showy of the Gaillardias. Found in sections 7, 7A, 4A, 4, 4B, 2, 3, and 5. It will probably grow anywhere. This Gaillardia is valuable on highways because of the color of the flowers and growth habits. In many places it is a rank-growing wayside weed having a flower two inches in diameter. In other locations it is a weak-growing plant, producing flowers not over one-half of an inch in diameter. Along the Gulf Coast it grows almost in salt water and has a prostrate stem and somewhat succulent leaves, but the characteristics of the plant are so distinct that it should not be confused as it has been. There are nine other species of this genus known to occur in Texas and probably two more. This plant is worthy of cultivation and anyone wishing to use native plants should collect seed heads as soon as they are ripe and in the fall of the year plant this seed where the plants should grow the next spring.

*Grindelia grandiflora* Hook. Giant Tar Weed. Found in sections 3 and 5 and will grow anywhere planted. This is a very beautiful and showy plant consisting of a single upright stalk sometimes three-fourths of an inch in diameter reaching a height of four feet. It bears numerous dark green, almost coriaceous leaves which bear large spine-like teeth. The entire plant has more or less of a gummy substance on it. The flowers are about two inches in diameter bearing golden yellow petals and surrounded by many dark green bracts. This plant is a very desirable species to propagate along roadsides and in vacant places in parks. It will grow in any kind of soil but prefers soft soils with some shade; however it will do well if the seedlings are given a little protection from the sun.

*Gutierrezia dracunculoides* (DC.) Blake. The Small Headed Broom Weed. Found in sections 7, 7A, 4A, 4, 4B, and 5. This is one of the most common of the broom-weeds, which in late summer line the roadsides with smooth blankets of green that later produce variously shaded yellow flowers. This species produces many small heads of flowers in place of a single common flower at the tip of each stem. It is an annual or biennial and in places where it does not occur without any aid, this plant should be brought in. It has many uses besides that of covering barren soil or hiding rock. The plant is beautiful throughout the summer and fall and adds much to the stopping of wind erosion. It is easily obtained by cutting the plants which have the ripened heads and threshing. There are eight other species of this plant in Texas, all of which are well worthy of places where roadside and parks are to be ornamented.

*Helenium microcephalum* DC. Small Flowered Sneeze Weed. Composite growing to a height of eighteen to twenty inches and found in moist localities in sections 4A, 4, 4B, 2, and 5. The stems of the plant are adorned by numerous wings of leaf-like materials. The leaves are lanceolate and produced in small numbers. The flowers have small yellow centers and have short yellow ray flowers which sometimes are almost red. Were it not for the fact that this plant is poisonous to livestock,

it would receive wide plantings along roadsides and in parks; however where cattle are not supposed to range, this plant is sufficiently beautiful to be used in water plantings and to cover marshy spots. This genus has twelve other species the most of which are interesting and are worthy of being brought into cultivation. They are all swamp-loving plants blooming late in the fall, and are of sufficient character to attract attention.

*Helianthus angustifolius* L. Swamp Sunflower. A very beautiful and little known sunflower. It grows only in swampy or damp locations in sections 1 and 2 but will grow with protection in sections 4A, 4, 4B, 3, and 5. The plant arises from a perennial root stalk, generally growing in water. It puts up a smooth stem to the height of six to ten feet. It bears numerous lanceolate leaves five to six inches long and a large number of attractive yellow flowers about two inches in diameter. This plant should be made a part of every water planting where the species is available.

*Helianthus argophyllus* T. and G. Silverleaf Sunflower. Native in sections 4A, 4, 4B, and 3 but will grow anywhere in the state. The plant prefers soft soils with some moisture but will grow in any locality where corn grows. The plant is a tall-growing flower reaching a height of eight to ten feet. The entire plant is covered with silver gray wool. The leaves are ovate and seven to eight inches in length. Throughout the summer and fall it bears numerous sunflowers about two inches in diameter. A row of these or a specimen plant is very imposing. The plant is an annual but the seed should be planted in February. Commercial.

*Helianthus debilis* Nutt., var. *cucumerifolius* (T. and G.) A. Gray. Sand sunflower. The name of this sunflower is given as it occurs in most of the references to native plants of Texas. In order that it may be easily recognized, this plant is annual or biennial, growing to the height of three to four feet, having slender stems and bearing deep yellow sunflowers about two inches in diameter at the ends of the long bare stems. Just how this plant received its specific name is unknown as the leaves have no resemblance to any cucurbit. Wherever soft and sandy soils exist this species of sunflowers is a welcome addition to any roadside or park planting. As the center of a large flower bed in a yard there is no better species, as with a little cultivation it will bloom throughout the summer and will never become unsightly, providing the flowers are removed when the seed commences to ripen. The seed of this plant can be procured anywhere throughout the sandy region of Texas.

*Helianthus Maximiliani* Schrad. Maximilian Sunflower. A very well-known and beautiful sunflower found native in Texas in sections 7A, 4A, 4, 4B, 2, 3, 5, and 6. The plant is a perennial and puts up many annual stalks from the perennial root. These stalks in late summer bear numerous light yellow sunflowers about two inches in diameter from the axils of the leaves and on short peduncles in the axils of the stems. The plant has been in cultivation for many years. Commercial.

*Helianthus petiolaris* Nutt. Prairie Sunflower. A plant resembling the common sunflower *Helianthus annuus* L. except that the plant has a more vigorous appearance but is smaller in growth, deep green in color, and without the large amount of wool. It is found in sections 7, 7A, 4A, and 6. Throughout sections 7 and 7A this plant should be largely used as backgrounds around flower beds, as windbreaks around poultry yards, and as a roadside ornamental. It does not grow sufficiently tall to obstruct the view but does cover the roadside with gold and black, giving a very pleasing boundary to the highways which transverse the low and high plains.

*Helianthus tuberosus* L. Jerusalem Artichoke. A species of sunflower having a heavy underground root system which produces in midsummer large numbers of white tubers that are shortened stolens. These contain a considerable amount of sugar. The plant has been exploited very largely as a source of pig feed. It is supposed to be native of the prairie country of the central Mississippi Valley, indicating that the plants of north central Texas are either importations, or represent the southwest border of this species. Because of the luxuriant growth, large numbers of slightly stems and flowers, this plant is recommended for roadside and park work wherever a plant is needed that can endure much neglect and extremes of the weather. Commercial.

*Heterotheca subaxillaris* (Lam.) Britt. and Rusby. Camphor Weed. This plant is mentioned as it is the most widespread and prolific flowering plant in the state which blooms during the summer and fall. The plant consists of a much branched stem which reaches the height of two to three feet. It has lanceolate leaves covered with wool. From July until November this plant is covered with hundreds of small yellow sunflower-like heads. They are about three-fourths of an inch in diameter. The entire plant has the odor of camphor. Were it not for the fact that this plant is so abundant, it would be highly desirable as an ornamental. Because of its wonderful ability to grow wherever there is a place that is hard to obtain a vegetable cover, this plant is highly recommended. The seed can be obtained on any roadside during the latter part of summer.

*Hymenoclea monogyra* T. and G. Burrow Brush. A near relative of rag weeds found in sections 3, 5, and 6. The plant is perennial. The stalks aboveground are weak and resemble the stems of the annual ragweeds. The plant bears very numerous finely divided linear leaves throughout the spring and summer. In late summer the plant is covered with masses of small greenish white flowers which are more showy after the flowers have completed their blooming and have fallen from the surrounding bracts. This plant is decidedly ornamental. If properly cared for, it resembles a thick growing cedar when not in bloom. When in bloom it is a plant that is hard to describe but very beautiful. It can be grown from seed and is of value as a background for flower beds or a roadside cover. It can be dug in the wild or the seed can be procured in early autumn and will grow anywhere.

*Hymenopappus artemisiaefolius* DC. Wild cauliflower. A quite distinguished looking winter annual. Throughout the late winter and spring, the plant exists as a large rosette of finely divided lanceolate leaves. In April and May it puts up a stalk to the height of two to five feet. The stalk is covered with small finely divided leaves and white wool. The flower clusters are protected by silver white bracts which make the plant very showy. This species is found in sections 7, 7A, 4A, 4, 4B, 1, and 2. This plant is valuable in park work as it is one species which will grow on rough and unoccupied soils preparing the soils for more ornamental species. The seed can be collected on any roadside.

*Hymenopappus corymbosus* T. and G. Found in sections 4A, 4, 4B, 2, 3, and 6. A small flowered plant resembling the above. Attention is called to this plant because it is often confused with *Parthenium*. This species has never been proved to be a cause of hay fever.

*Hymenopappus scabiosaeus* L'Her. The common *Hymenopappus* of sections 4A, 4, 4B, 1, 2, 3, and 5, where it is a most common roadside and pasture plant. Like others of this species, were it not so common, it would be largely cultivated. It should be used wherever one desires a plant to make a background for low growing species which bloom in early spring, as the plants of this species reach their climax by the middle of May, and should be removed.

*Kuhnia eupatorioides* L. False Boneset. An annual plant coming from a heavy perennial root cluster. Found in sections 7, 7A, 4A, 4, 4B, 2, 3, and 5. It prefers soft soils and some shade. The stems are inclined towards red, the leaves very thick and linear. Throughout the summer it bears numerous pale yellow clusters of tubular composite flowers. These flowers are followed by masses of white feathery tails of seed. It is also called false ironweed. Where one is making a collection of showy perennial plants which can be grown with little attention, *Kuhnia* in any of its species makes a fine plant. Specimen plants cannot be equalled. It does not multiply rapidly and should be obtained by root divisions.

*Kuhnia glutinosa* Ell. Prairie False Boneset. A slender-growing species of *Kuhnia* very similar to the above but found on the prairie sections of 7, 7A, 4A, and 4B. This plant being adapted to the open should be used throughout sections 7 and 7A as a yard ornamental. Where wind erosion is detrimental to gardens, a hedge around the garden will stop blowing sand.

*Lactuca floridana* (L.) Gaertn. Tall Wood Lettuce. An annual plant found in deep woods along water courses. Plant grows to the height of three to eight feet. In winter it appears as a rosette having lanceolate leaves, deeply incised, up to eight inches in length. In early summer it puts up a smooth, hollow flowering stalk which is slightly branched above and bears sessile, linear, incised leaves. The flowers, which are borne in some numbers, are about one-half inch in diameter and bright blue. The flowers are followed by balls of white silky umbrellas that carry



the seed. It is interesting to know that this plant is one which furnishes the linings for nests of many species of small birds and mice. Because of its large size and rapid growth this plant should be used around all water gardens as a specimen plant. For a peculiar ornamental a single plant of this lettuce grown on a lawn will attract considerable attention and as it can be removed at the beginning of summer and replaced by another plant it is valuable as an early lawn ornamental.

*Lepachys columnaris* (Sims) T. and G. Long Headed Cone Flower. Found in every part of the state. The best known of the cone flowers. It is also called Nigger Toe and Mexican Hat. The column bearing the tube flowers is sometimes two inches in length. The ray flowers are bright yellow. The plant is to be found along every roadside in the state. It also occupies pasture lands and is accused of being poisonous to cattle. It is to be said that cattle will not eat this plant if any other food is available. To propagate it one should get root divisions for quick results, or for many plants, sow the seeds. It requires two years from seed to flowers. It will grow in any kind of soil and anywhere. Commercial.

*Lepachys columnaris* Pursh. var. *pulcherrima* (G. Don) T. and G. This differs from the type in that the ray petals are dark maroon or black. In many parts of the state the type and variety occur in about equal numbers; however in sections 7, 7A, 4A, 4, and 4B the variety is dominant. The variety is probably more showy than the species and should be grown along with any collection of this genus of plants.

*Lepachys peduncularis* T. and G. A plant typical of the genus; however it is annual or biennial, has lanceolate cut leaves, and bears its single flower clusters on a long bare stem. This plant is marked from the other members of the genus by having a very long column which is inclined to be bent or crooked. The tube flowers are greenish and the ray flowers are golden yellow. A very beautiful and graceful species which grows best in some shade where soft soils exist. Commercial.

*Lepachys peduncularis* T. and G., var. *picta* A. Gray. A plant resembling the type but growing along the Gulf Coast. The leaves are thickened and the flowers are much more highly colored than the species growing in shade. For Gulf Coast plantings or for beds that are in the full sun, this variety of *Lepachys* is recommended.

*Lepachys Tagetes* (James) A. Gray. The Shortrayed Cone Flower. Found in sections 3, 5, and 6. It grows as a thick cluster of stems which reach a height of about one foot. The leaves are very abundant, stiff, and linear. The flowers are born in flat-topped clusters. Differing from the remainder of the genus the flower heads are about one inch long, causing the flower clusters to be congested. The flowers are conspicuous but their maroon color gives the plant the appearance which no other species has. This plant is beautiful in yards and gardens as a specimen plant or as a border. As it is perennial, it will give good service. As a roadside plant in the sandy portions of the Rio Grande plains, this species will be valuable as it is a native and a sand binder, and is acclimated to the hot dry summers.

*Liatris acidota* Engelm. and Gray. Slender Button Snake Root. A species of sections 7, 4, and 2. A low-growing plant of this well known group. It arises from a globular perennial tuber. The stalk is slender and bears numerous linear leaves. The upper part of the stalk is covered with clusters of deep red tube flowers. It blooms from the middle of August to the middle of September; however if the plants are cut off before they bloom, and rains occur, another stalk will be put up to a height of about five inches which will bloom abundantly in late fall, making this plant a fine one for parks and yards, as the gardener can cut away the flower stalks of some specimens and then by watering produce a late fall bloom which will be much admired. It can be raised from seed or by tubers.

*Liatris cymosa* (H. Ness) K. Schum. Known from a small locality in section 4B but probably occurs throughout much of the eastern part of Texas. This *Liatris*, differing from other species, does not produce a single spike of flowers but the plant branches from the base and makes a flat-topped beautiful green herb about fourteen inches in height which bears in July and August numerous rose red clusters of tube flowers. This is one of the most beautiful of the genus and should be made available to the public by some dealer. The plant is easily grown either from seed or from the transplanted tubers. This plant is recommended throughout the whole of Texas as it will grow in shady locations.

*Liatris elegans* (Walt.) Willd. Handsome Blazing Star. Most spectacular of the family. It grows to a height of from three to seven feet and bears large clusters of lavender flowers on the upper third of the stalk. The outer tube flowers have lobes about one-fourth of an inch long which are so arranged as to make the flower appear as a swastica cross. This plant is widespread throughout Texas and exists in several varieties, all of which are worthy of cultivation. The plant can be grown from seed or by transplanting tubers. It is known to occur in sections 1, 2, 3, 4, 5, 6, and 7. Commercial.

*Liatris punctata* Hook. Dotted Button Snake Root. Probably the best known button snake root. It is common throughout sections 7, 7A, 4A, 4, 4B, and parts of 3 and 5. It is found in all kinds of soils and occurs as a cluster of red brown stems heavily covered with linear green leaves. This cluster of stems has a pleasing appearance throughout the whole of the summer. In early fall the stems grow to a height of two and one-half to three feet, and bear numerous clusters of pink to red tubed flowers. It has been brought into cultivation probably more than any native perennial ornamental. It should be cultivated everywhere because of the excellent service it gives. To keep the plants in good shape and bearing prolific blooms, about every three to five years the old root clusters should be removed and young tubers substituted. The young tubers are easily secured by planting the seed in October in a well-worked and well-watered seed bed. The next April the tubers will be about one-half inch in diameter and ready to transplant. Most of them will bloom that fall. Commercial.

*Liatris pycnostachya* Michx. Hairy Button Snake Root. Very similar to *L. punctata* but gray green in color instead of light green. The heads are very congested with long hair in between the clusters. This plant should be planted along with *Liatris punctata*. It is found in similar locations and a hedge or border of alternating plants of these species gives a very showy effect. Commercial.

*Liatris squarrosa* Willd., var. *intermedia* (Lindl.) DC. Scaly Blazing Star. A beautiful species of this popular genus occurring in section 4B but which will grow anywhere in the central part of the state. It prefers soft soils with some moisture. The spikes are quite tall reaching a height of three to four feet and bearing at intervals along the upper part peculiar clusters of maroon-colored tube flowers on a peduncle which is heavily coated with bracts. This is a very peculiar and ornamental species and can be obtained by collecting seed or tubers from the wild.

*Lindheimeria texana* Engelm. and Gray. Lindheimer's Daisy. Yellow Texas Star. This is a well-known early yellow-flowered composite. It is known to school children by the name of Elephant's Foot because of the five broad yellow strap petals. This is a perennial or biennial and blooms throughout a period of one to two months. Because it bears the name of the most famous botanist of Texas, a bed of this daisy should be maintained in every park or botanical garden. It can be easily grown from seed.

*Lygodesmia texana* (T. and G.) Greene. Skeleton Weed. A very peculiar plant found in sections 4A, 4, 4B, 3, and parts of 5. The plant consists of an underground perennial cluster of roots. In early spring it sends up some rush-like stems to the height of at least fifteen inches. These bear a few linear leaves. After rains during the summer, each stalk produces from one to several rose red clusters of all strap flowers about one and one-half inches in diameter. This is one of the most spectacular of composite flowers of Texas. It is easily transplanted and easily raised from seed. While unknown to gardeners this plant has been transplanted and grown with great success by various farm and ranch people. Under cultivation where vegetable competition is removed, the plant has a fresh appearance and bears numerous flowers. It is best obtained by root divisions. This genus has three other species that are known to central Texas and will grow anywhere planted. One of them has very small pink flowers, while another has white flowers which turn pink or red.

*Marshallia caespitosa* Nutt. A most peculiar and beautiful composite found in sections 4A, 4, 4B, 2, 5, and parts of 3. It is a perennial, the annual stalks which grow to a height of about a foot, bearing many linear leaves at the base. The flower stems are six inches long and bear clusters of large white to pink tube flowers, giving this plant a very attractive appearance. The plant has been cultivated in Europe and seed can be obtained from some dealers. In Texas it is easy to obtain root divisions or the entire clusters from the wild. This plant is recommended only for yards and for beds in parks.

*Melampodium cinereum* DC. Rock Daisy. A most widespread low-growing composite. Found throughout sections 4A, 4, 4B, 3, 5, and parts of 6. The plant seemingly prefers rough rocky ground and full sun. The plant appears as a heavy cluster of somewhat crowded stems about six inches high. This bears throughout the summer a succession of white daisy-like flowers consisting of a few tube flowers in the center and four to seven white strap petals. This is easily transplanted from the wild or grown from seed. It makes a beautiful border plant and is well adapted to cover rocky and unsightly hills along roadsides.

*Mikania scandens* (L.) Willd. Climbing Boneset. A vine-like plant found in sections 7A, 4A, 4, 4B, 1, 2, and parts of 3 and 5. It prefers overflow lands and muddy borders of slow-flowing streams and marshes. In early summer it is a vine-like plant bearing almost triangular leaves and weak branches which are supported by the surrounding herbage. By the middle of summer it puts out from the axils of the leaves a cluster of white to pink tube flowers resembling the blooms of *Eupatorium*, a genus from which this one was separated. So numerous are these flower clusters that acres of this white plant can often be seen along the edges of swamps and water courses. It is a fine honey plant. It is best secured by obtaining the seed and scattering it in November along the edges of marshes and streams. Where standing water exists along roadsides, this is one of the plants that should recommend itself, as this vine will cover large areas with a very attractive plant for at least nine months of the year. For water gardens a single plant of this species is desirable, where it can be used as a background or a shade for more tender plants.

*Parthenium Hysterophorus* L. Santa Maria. Feverfew. This plant is mentioned as it is confused with many other white-flowered composites. It is a most common roadside weed especially in towns where throughout the spring and summer its white flower clusters are a prominent object along roadsides. This plant is one of the hay fever plants of Texas and the plant itself should be superseded by other and less injurious plants.

*Pectis angustifolia* Torr. Lemon Scented Pectis. A very interesting plant found only in section 6 and the extreme southern part of section 7. It is a low-growing composite reaching a height of three to four inches and bearing throughout the summer very numerous small sunflower-like heads. The entire plant has a strong medicinal odor and the presence of the plant can be detected long before it can be seen. It makes a very handsome border plant or when grown in pure stands is very showy. In numerous places in sections 1 and 10, this plant has been brought into cultivation by the ranch people with much satisfaction. This species and several others which are very similar and occur in the similar localities should be tried out by nurserymen and made available to the public.

*Perezia nana* A. Gray. A plant which when well known will be one of the most popular of ornamentals. It consists of a number of prostrate short stems which bear from five to six coriaceous light green leaves having large teeth along the edge. These green leaves persist through-

out the winter, making the plant a fine ground cover for any kind of a situation. In early spring the plants send up a few stalks to the height of about one inch and bear purple flowers. After the ripening of the seed, the plant dies down and does not appear until the next year. Under cultivation the plant will continue to produce leaves throughout the year. This plant is strongly recommended for bed work in yards, for a perpetual cover in cemeteries, and for border work in parks. The seed must be procured from the wild as there is no source of it in commerce. It is quite common through the drier portions of sections 7, 7A, 4A, 4, 4B, 3, 5, and 6.

*Perezia runcinata* Lag. A very interesting plant which will become popular as an ornamental. It grows throughout the year as a rosette having coriaceous dark green leaves ornamented with lobes and teeth. At intervals it puts up a stem to the height of a few inches and bears solitary purple composite flowers. In some locations it is called perennial thistle although it has no near relationship to the thistle group. It does not multiply rapidly and should be secured by growing from seed. As a border plant under cultivation, this species becomes very beautiful as it puts out numerous leaves which become glossy green and bears numerous flowers. It has also been tried as a pot plant and will live inside the house with customary care for long periods of time. It is found throughout sections 7A, 4A, 4, 4B, 1, 2, 3, and 5.

*Perezia Wrightii* A. Gray. This perennial, which grows as an upright plant and reaches a height of two to three feet, bears very numerous coriaceous leaves about one and one-half inches in diameter and is adorned with coarse teeth. The two sizes of leaves are very similar. It bears at times small heads of purple flowers. As a bed plant for parks and roadsides and as a background for a water planting, place in which it delights, this plant is of value. It is found in sections 3, 5, and 6, generally along water courses or in wet places.

*Pinaropappus roseus* Less. White Dandelion. A perennial plant found in sections 4A, 4, 4B, 3, and 5 which consists of a perennial underground root, and some slender annual stems that are almost without leaves and that bear throughout the spring and summer large white flowers, some of them two inches in diameter. In drying, these flowers turn red. This white dandelion is another plant which should be brought into cultivation because of the fact that with its lack of leaves, it can be grown in the same bed with more leafy species and without coming into competition with them. The white flowers are made more attractive by a leafy background.

*Pluchea camphorata* (L.) DC. Salt Marsh Fleabane. A plant very much resembling *Eupatorium* but an inhabitant of the salt marshes along the Gulf Coast. It is peculiar in that it has the odor of camphor. The plant is a perennial bush and bears small heads which are purple and very ornamental. The plant should be utilized through the Gulf Coast as a plant for roadsides and yards. It is best secured by root divisions.



*Pluchea purpurascens* (Sw.) DC. Inland Marsh Fleabane. A strong-growing perennial reaching a height of three to four feet and very much resembling *Eupatorium*. Throughout the summer it bears large numbers of small composite flowers. The bracts which surround these are highly colored from pink to purple. This plant is common throughout central Texas where moist conditions occur. When cultivated this species will respond to such an extent that it grows much larger and produces many more clusters of flowers. One of the peculiar uses to which farm people have put this plant is the growing of a clump around leaky hydrants in the vicinity of artesian wells, where the plant grows to sufficient height to furnish permanent shade for the hydrant. In several places around storage tanks for irrigation purposes this plant has been used, as here they protect the earth walls from wave cutting and from erosion by rain water. The plant is best obtained by root division.

*Polypteris callosa* (Nutt.) A. Gray. The Rayless Polypteris. Found in sections 7A, 4A, 4, 4B, 2, 3, and 5. An annual or biennial slender-stemmed plant with linear gray-green leaves which bear many small dots. Throughout spring and summer this plant bears numerous red clusters of tube flowers. Throughout its territory it has the common name of Red Top. It is supposed to be a honey plant. For mass planting along roadsides and in parks, this is useful.

*Polypteris Hookeriana* (T. and G.) A. Gray. Biennial growing as a rosette throughout the first summer and winter, and to July of the second year, when it puts up a tall flowering stem to a height of from two to three feet. The upper part of the stem and the flowers themselves are covered with a viscous material. This plant has a rather offensive odor. The flowers, however, are so beautiful that they warrant its cultivation. The flowers are numerous and consist of a disc nearly two inches in diameter of rose red strap petals in the center of numerous rose red tube flowers. The gorgeous cluster of rose color exists through a period of nearly a month during the fall. The plant is easily grown by obtaining the seed in the wild and planting in soft soils. It is found in shady and moist localities in sections 4A, 4, 4B, 2, and parts of 3 and 5.

*Polypteris texana* (DC.) A. Gray. A plant similar to *Polypteris callosa*; however it is dark green in color, grows to a height of three to four feet, and produces numerous small rose red clusters of tube flowers. It is common in sections 7A, 4A, 4, 3, and parts of 5. It is recommended for roadside work, for mass plantings in parks, and for backgrounds in yards. It is best grown from seed. This genus contains four other species, most of which are very near in form to *Polypteris Hookeriana* and are splendid species to grow in yards and parks. All of this genus are fall blooming species and can be grown readily from seed.

*Psilostrophe gnaphalodes* DC. A very beautiful composite occurring in sections 4B, 1, and 3 and probably will grow anywhere planted. It is perennial or annual, grows to a height of fifteen inches, consists of straight stems, and bears gray-green leaves and a flat-topped cluster of very peculiar yellow composite flowers. These flower heads very often

hold their shape through long periods of time, resembling the composite everlasting. This plant is poisonous to livestock, but as in the case of other plants, livestock will not eat it unless compelled to do so. As a specimen plant or border there is none of the yellow-flowered composites that equal this one. It is also recommended for roadside plantings.

*Psilostrophe Tagetinae* (Nutt.) Greene. A plant similar to the above but not widespread. It is found through sections 7, 7A, 5, 6, and probably in 3. It has the same drawbacks as the other species but is just as beautiful for cultivation. As it occurs more plentifully it probably is more easily grown. These species should be grown by nurserymen and the plants made available to gardeners.

*Rudbeckia amplexicaulis* Vahl. Clasping Leaf Brown-eyed-Susan. The well known and widely distributed brown-eyed-Susan of central Texas. Needs no introduction and is commercial.

*Rudbeckia glabra* DC. Found along the Gulf Prairie. It differs from the first species in that it has a smooth surface. The flower is just as ornamental and is widely cultivated.

*Rudbeckia grandiflora* C. G. Gmel. A Largeflower Coneflower. A most spectacular coneflower. It is large and the numerous cone-flowers are in various shades of black, red, and yellow. This plant is also in cultivation.

*Rudbeckia maxima* Nutt. Great Coneflower. A plant native to the upper Gulf Coast and the moist regions in sections 4A, 4, 4B, and 1. This giant coneflower reaches a height of six to seven feet. Each plant bears but one large flower which has a diameter of about four inches and a cone to the length of three to four inches. The plant is a winter annual. It can be raised by growing the seed in well-worked soil during the winter time, and planting the seedlings in early spring where they will receive considerable water. The plant will grow in the full sun. A row of these plants which bloom in midsummer is extremely showy.

*Sclerocarpus major* Small. Found in sections 3, 5, and 6. A winter annual bearing a number of well-branched stems and green lanceolate leaves three to four inches long. Throughout the summer and fall, it bears numerous composite flowers somewhat resembling *Coreopsis*. The strap petals are dark yellow about one and one-half inches long. The center of the flower is dark brown. This genus exhibits a peculiar structure of flowers in that each of the tube flowers has a separate bract so that the whole cluster has no binding line of bracts as in *Coreopsis*. This is a beautiful plant and should be widely cultivated. It grows readily from seed.

*Sclerocarpus uniserialis* (Hook.) Benth. and Hook. A *Coreopsis*-like plant found in sections 4A, 4, 3, and 5, having numerous flowers about one inch in diameter. The plant is peculiar in that it only grows in the dense shade of trees. Its most common location is under huge

live oaks where it transfers the bare soil into a bed of yellow and sweet-scented coreopsis flowers. The plant is very attractive to insects and butterflies. Wherever one has soft soils, some moisture, and much shade this plant recommends itself. The seed is easily obtained by threshing the dead plants.

*Selloa glutinosa* Spreng. A peculiar perennial or annual aboveground occurring in sections 7, 7A, 4A, 4, 5, and 6. The bush or herb consists of a number of upright stems reaching a height of a few feet, and the leaves are lanceolate and numerous. It bears small clusters of yellow composite flowers through the summer and fall. The whole plant is covered with a glutinous material. As a background or a row plant for yards and parks, this plant is attractive. Along roadsides it will grow in places where anything else refuses to live. It is of great use throughout the western Edwards Plateau where it is native, and will grow where very little else can live as a cover for rocky hillsides during the latter part of summer.

*Senecio longilobus* Benth. A typical perennial *Senecio* found in sections 7, 7A, 5, and 6. It consists of a group of hard stems growing to the height of eighteen inches which are covered throughout the year with finely divided leaves. Through the summer no matter how hot or dry, this plant is adorned with a wealth of light yellow composite flowers. It has in its favor the fact that it is perennial under the most trying circumstances, and is native to sections of the state where native ornamentals are a rarity. It has against it the fact that this plant is poisonous to livestock when they are compelled to eat it. For roadside plantings for parks, cemeteries, or yards this plant makes a fine addition to the ordinary ornamentals. There are eighteen species of *Senecio* in the state of Texas, ranging from very small and annual herbs, to perennial shrubs. Most of them are of value as ornamentals in some sections and for definite purposes. The one thing in their favor is that they are easily grown, the annuals from seed and the perennials by root cuttings or from seed. All of them produce an abundance of bright yellow flowers through a period of time. To those who desire to experiment with native ornamentals, this genus is recommended as having much favorable material.

*Tetragonotheca texana* (A. Gray) Engelm. and Gray. Perennial Coneflower found in sections 4A, 4, 3, and 5. It is partial to sandy soils and will grow either in the full sun or in deep shade. The plant has very coarsely divided leaves, and grows to a height of about ten inches where in spring it gives rise to new stalks which at the height of about two feet produce several yellow-petaled cone-flowers. This genus can be told from all others because the flower bud, which is one-half inch in diameter, is enclosed in four bracts that have very decided wings along the sutures. This is also called square-budded coneflower. The plant should be grown in yards with the purple coneflower because it is similar in form and lends itself to formal garden arrangement. The plant is best secured by growing from seed.

*Thelesperma ambiguum* A. Gray. Native of section 5. A plant having flowers very similar to *Coreopsis*. It is a winter annual, the stems being long and delicately fluted, and bearing numerous very finely divided linear leaves. The strap petals are lobed and generally two-colored. This plant should be raised in yards or along roadsides throughout its territory.

*Thelesperma Burridgeanum* (Regel) Blake. A tall-growing *Coreopsis*-like plant having a flower the strap petals of which are about equally yellow and maroon. This plant is carried in many seed catalogues under the name of *Cosmidium Burridgeanum*. It is very common in sandy soils in sections 4, 4B, and 3 where it is the most common roadside plant. It will grow anywhere and should be widely scattered as a roadside plant.

*Thelesperma megapotamicum* (Spreng.) Kuntze. A showy member of this species found in sections 7, 7A, 5, and 6. It differs from the others in that it has no ray flowers; however the peculiar red brown heads of the tube flowers borne on the long graceful green stems make it ornamental as a roadside plant, especially in the sections where it grows.

*Thelesperma trifidum* (Poir.) Britton. The tall *Thelesperma*. A plant found very commonly in sandy woody situations through sections 4A, 4, 3, 5, and 6. It grows to a height of from four to seven feet and bears a few typical composite flowers yellow with black centers. For a showy plant in a park or yard, this is recommended. It will maintain itself where shade and moisture exist.

*Varilla texana* A. Gray. A very peculiar plant found only in salt flats. It, however, will grow in many places along the seacoast and in other localities where peculiar plants are needed. It consists of a perennial stem four or five inches high and very thickly covered with linear leaves which extend like the needles of a spruce branch. From the top of the cluster during the summer are borne small wire-like stems which are topped by yellow composite flowers about one-half of an inch in diameter. In salt flats there are often hundreds of acres of this plant growing as a pure stand. Wherever a saline location exists which is moist, it should be planted to this ornamental. It can be found along the outcrops of the Fayette or Jackson formation in South Texas.

*Townsendia exscapa* (Richards.) Porter. Found in sections 7, 7A, 4A, and 6. A very peculiar, small, spectacular plant, very desirable for a rock garden. It grows in dry and rocky soils in the full sun and is really a shrub although it grows to a height of only one inch. The plant aboveground consists of numerous lanceolate spine-like leaves, the flowers about one and one-half inches wide, and white to purple. The umbrellas which follow the flowers carry the seed and are extremely silky and large, a fact which helps the collector in finding the seed of this plant. In its native habitat it is found on rocky flats. Here in the afternoon one will see a cluster of white wool and under the cluster will be found the *Townsendia* plant. As it is quite numerous in its native

home, to secure a quick stand the plant should be dug in the wild as it will transplant easily. The seed should be collected and the young plants grown in a well-worked and protected plat consisting of soils where lime content is high. As a spectacular plant for a rock garden or to grow in a pot or windowbox there is no better than this.

*Verbesina encelioides* (Cav.) Benth. and Hook. Yellow Top. A tall-growing annual with blue green foliage. The plant is found throughout the whole of the state of Texas. In the southern part it grows and blooms throughout the year, in the northern part only in the summer. The leaves are quite large and fiddle-shaped which gives the name to the plant. The flowers which are borne in profusion are beautiful daisies about one and one-half inch in diameter. If this were not common it would be sown as an ornamental. It has its place for a beautiful cover crop for newly cleared soils throughout the winter and spring and again in late fall. The plant will bloom in three weeks from seed if given sufficient water. It is recommended wherever one needs a beautiful cover of blue green leaves and yellow flowers at once. The only drawback to the plant is the fact that it goes wild and has an odor not agreeable to some people.

*Verbesina helianthoides* Michx. Sunflower-Crown-Beard. A plant growing in sections 7, 7A, and 6. It very much resembles a small sunflower having sunflower-like leaves and a sunflower-like head; however, the flower is brick red in color and grows only to the height of one foot. In many places it occurs in long stretches by the roadsides and should be widely planted for the purpose of road beautification. As a specimen or row plant in yards, it will do well in any part of the state.

*Verbesina texana* Buckl. Mesquite-Crown-Beard or Texas Crown-Beard. A winter annual growing from a rosette of large velvety green leaves which puts up in summer a flower stalk to the height of three to four feet and bears in the fall of the year clusters of small white composite flowers. The stems of this species do not bear the wings of leaf-like material that are found in *Verbesina virginiana*. It is called the mesquite-crown-beard as it is found in heavy stands of mesquite timber in sections 3 and 5. This plant should be widely distributed through those sections, as it will grow on soils and during years when all other ornamentals fail.

*Verbesina virginica* L. Virginia Crown-Beard. Found in sections 7, 7A, 4A, 4, 1, 2, 3, and 5. It is an annual found in profusion where shade and moist soils occur. It frequently grows to a height of eight to ten feet. In some places the heavy timber is crowded with this as an undergrowth. In the fall of the year the flowers make a solid layer of white throughout these sections. It is a good honey plant. As an ornamental for a background in a yard or as a mass stand in park work, this plant is excellent. It is known from the other species of *Verbesina* by the fact that the upper stems are covered with wings of leaf-like material.

*Vernonia Baldwini* Torr., var. *interior* (Small) Schubert. Small. Common Ironweed of Texas. Found in sections 7, 7A, 4A, 4, 4B, 1, 2, 3, and 5. A strong-growing perennial, annual aboveground, growing as a cluster



of stems which are furrowed and bear numerous lanceolate leaflets from three to five inches long. Throughout the summer it bears numerous clusters of dark red tube flowers. This plant makes a beautiful addition to a yard as a specimen plant. It can be used to good effect in parks as hedge plants, and clusters of them along roadsides are very showy. This plant should be used in the plantings around markers. The plant should be secured by root divisions.

*Vernonia Lindheimeri* Engelm. and Gray. Lindheimer's Ironweed. Common to sections 4A, 4, 4B, 2, 3, 5, and 6. A typical *Vernonia* but is covered with gray wool, giving the entire plant a peculiar gray color. It bears small dark red flowers through the latter part of summer. This plant like the other has a place as a specimen plant in every yard and should be extensively used in parks and along roadsides. There are ten other species of *Vernonia* which are widely scattered throughout Texas. All of them are worthy of a place in cultivation and all are easily grown by root divisions.

*Xanthisma texanum* DC. Sleepy Daisy. Found in sections 7A, 4A, 4, 4B, 3, and 5. A most interesting ornamental. The plant is an annual and consists of a straight stalk about fifteen inches high which bears at its summit through the summer numerous yellow daisy-like flowers. These are about one inch in diameter. The plant received its name from the fact that it does not open until about ten o'clock in the morning. The plant can be easily grown by collecting the seed from the ripened heads and sowing in November and December in well-prepared soils. The seedlings appear as small rosettes having lobed leaves. It is excellent for roadside planting.

*Zexmenia hispida* (H. B. K.) A. Gray. A perennial common in sections 7A, 4A, 4, 4B, 3, and 5, and not unknown elsewhere. It is a plant having rough hairy leaves and growing to the height of about fifteen inches. Throughout the summer it produces numerous orange-yellow, daisy-like flowers. As it bears the most consistent orange-colored flowers among native composites, it is known throughout Texas as Orange Daisy. This plant has a decided place in park and roadside work, as it will grow in the most rough and waste lands. It can endure drought and heat. It will grow equally well in the semi-desert parts of sections 5 and 6 and in the more moist portions of sections 4A, 4, and 3. The plant is easily transplanted or can be grown from seed.

*Zinnia grandiflora* Nutt. Prairie Zinnia. A plant very abundant in the northern parts of sections 7A, 4A, and 4 and will probably grow anywhere planted. It consists of a tuberous root which in early spring gives rise to a cluster of one to many upright stalks, growing to a height of five to six inches. They are supplied with small ovate leaves. Throughout the summer, these stems are topped by clusters of composite flowers which are about one inch across. Each flower consists of four or five yellow strap petals and four or five yellow tube flowers. This plant should be very widely sought out and planted as a garden specimen plant or a border plant. It is excellent in rock gardens and for mass planting in parks. In many places it has become the dominant roadside ornamental, as the plant was present when the road was built.

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